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A HISTORY OF EARLY CHINESE ART

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A HISTORY OF EARLY CHINESE ART

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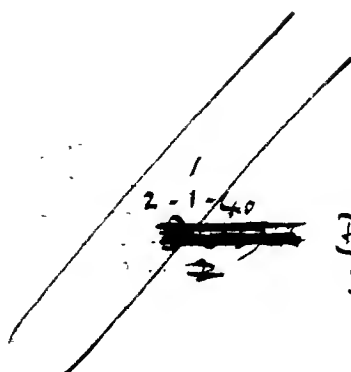
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INTRODUCTORY REMARKS

THE development of architecture in China has since the earliest times been largely determined by intimate contact with nature, which to the Chinese, as to many other ancient peoples, was ensouled. They planned their buildings with reference to the spirits of the earth, the water and the winds, they built their palaces according to heavenly constellations and they dedicated their earliest sanctuaries, which were simply open-air altars, to the gods of the soil. Their activity as builders just as well as their religious ideas reflect a search for co-ordination with nature which also has been of great importance for obtaining artistically successful results.

The beauty and interest of Chinese buildings cannot always be appreciated from a strictly architectural point of view ; they are often very simple and lacking in those elements of solidity and constructive proportions which we are used to connect with great architecture, but they have a charm of their own, born, so to say, out of a harmonious co-operation with nature. The wooden pillars rise above the supporting terraces, which often reach considerable heights, like tall trees on the mounds and hillocks. The lines of the far-projecting curving roofs suggest the long wavering branches of the cryptomerias, and if there are any walls, they disappear almost in the play of light and shade produced by the broad eaves, the open galleries, the lattice-work of the windows, and the balustrades.

It was, however, less by the suggestion of external forms than by the endeavour to interpret their purpose and meaning that the Chinese learned from nature. One may trace in their architectural activity just as well as in their pictorial and decorative arts a striving to express something of the life-impetus, the movement or the creative forces (*Yin* and *Yang*) which they found everywhere, though such endeavours are, indeed, modified by practical and constructional ideas.

It should furthermore be remembered that there are few elements in Chinese architecture which did not originally have a symbolic meaning, even if in the course of time it has been forgotten or blurred by more practical considerations. This often appears, as we shall find, even in the names of their buildings, and there is no doubt that they also developed a system of proportions based on certain numerical relations (probably also on astronomical observations) which had a determining influence on the composition of the plans of the large buildings for religious or ceremonial purposes. We shall have occasion to return to this subject later, but would wish here to offer the general suggestion that the more important Chinese buildings have as a rule developed from endeavours and conceptions which have little connection with our æsthetic points of view.

To this is due the comparative uniformity, not to say monotony, which is characteristic of Chinese architecture. Not only has the constructive system remained unchanged in principle during the centuries, but also the orientation of the buildings, their relation to their surroundings, and their external appearances. Even though certain innovations and special forms have been introduced from time to time, yet

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the great majority of the buildings has remained much the same ; and it is thus possible, even from comparatively late examples, to acquire a knowledge of the earlier types of architecture. The poor resistance of the material, of which the earlier buildings were constructed, is of course the chief reason for their total destruction, particularly as the Chinese (in contrast with the Japanese) entertained very little interest in the preservation of their early buildings and in reality never made any effort to construct permanent dwellings for any but the dead. It is, therefore, the tombs which are the oldest surviving architectural monuments in China, and after them a number of cave-temples and pagodas. For a knowledge of earlier palaces and temples we must turn principally to the descriptions in the local chronicles, and to some minor reproductions in clay, as well as to the analogy of later buildings of a similar kind. The material, however, is so comprehensive that we must limit our discussion to a few of its salient points.

THE WALLS

The most impressive structure still existing in China above the ground is the Great Wall, or, to use its Chinese name, Wan li ch'ang ch'eng (the Wall of ten thousand li). It is more than an ordinary architectural monument; to the great mass of foreigners with no particular knowledge about China it has become a kind of symbol or device of the Flowery Middle Kingdom, reflecting something of its enormous extension and extraordinary exclusiveness.

The erection of this mighty structure is traditionally ascribed to the great Ch'in emperor Shih Huang Ti, who, in his endeavour to weld all the scattered parts of the country into one great realm, also is credited with the plan of building a wall all around his empire, except on the coast side. In other words, he expected to encircle the whole empire in a similar fashion as the towns and villages used to be built around by walls since olden times. This tradition should not, however, be taken too literally, because there existed, no doubt, already before the time of Shih Huang Ti, stretches of protective walls along some parts of the northern frontier, though of a rather primitive kind, and on the other hand, it is evident that the finest portions of the Great Wall, as we see them to-day, are of a much later period. We have, as a matter of fact, no means of ascertaining just how much of the great structure was erected in Shih Huang Ti's time, though, to judge by the accounts of Chinese historians, an enormous amount of work must have been devoted to this undertaking during the emperor's reign. Hundreds of thousands of convicts, prisoners of war, and obstinate scholars, who had kindled the wrath of the emperor, were forced to carry stone and mud to the wall, and when they died by exhaustion, their bodies were added to the core of the structure. An iron will was behind the whole undertaking, and nothing that could then be accomplished by human labour was left undone. But from all that we know about architectural development in China, it can be safely stated that walls at that time were not brick-coated structures, but simply barriers of mud and gravel, possibly strengthened by stone slabs. Nor is it probable that the numerous repairs, reconstructions and additions which were carried out here during the successive dynasties between the Ch'in and the Ming, altered it much in its general appearance or manner of construction.

The Great Wall, as it exists to-day, offers portions of very unequal value and architectural appearance. It reaches from the Ocean to the Desert and traverses in its long course countries with highly varying geographical characteristics. The eastern limit of it is at Shan-hai-kuan on the coast of Chihli, and its western end is at Chia-yü-kuan, a place in western Kansu, not far from the Tibetan border. Between these points it is winding and turning, often in the most surprising fashion, forming at certain places deep curves and loops and sending out, at other places, arms or branches to protect trade-routes or borderlines between the provinces. The first great loop is north of Peking at Nan-k'ou; from here the wall branches out in two arms,

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which follow almost parallel courses across northern Shansi (Suiyuan) and join again near the Yellow River. A special arm stretches southward, marking the border between Chihli and Shansi. From the Yellow River the wall turns southward and follows the northern border of Shensi. Then it traverses for the second time the Yellow River in its more westerly course, thus cutting off the Ordos country from China proper, and runs into Kansu where it forms two big loops north of Lan-chou-fu before it stretches out towards the north-west, following closely the Mongolian border.

As no exact measurements or map of the Great Wall as yet have been made, it is practically impossible to reach an estimate of its full length, but it has been claimed that it approaches fifteen to seventeen hundred miles, or something like the distance from Marseilles to Constantinople, whereas the whole structure with all its arms and loops is thought to represent about two thousand five hundred miles.¹ Whatever the exact figures may be, it is evident that no structure of equal length or defensive power was ever planned or erected in any other country.

There can be no doubt that the wall served for centuries as a very effective bulwark against the raiding tribes of the North as well as a barrier for the population of the Middle Kingdom. The weapons then in use were not sufficient to impair it, even if it was not lined with stone or brick, and it was not easy to climb, when manned by guards with bows, or to pierce, except at the gateways erected at the principal routes leading down from the North. The remarks of Sir George Staunton, who was a member of Lord Macartney's Mission to China in 1790, are well to the point: ". . . nor was it without its use in keeping out from the fertile provinces of China the numerous ferocious beasts that haunt the wilds of Tartary; it served likewise to fix the boundary between the two countries and to prevent the escape of malefactors out of China and the emigration of malcontents."²

The five most important gates in the Great Wall are at Shan-hai-kuan, where the road goes to Manchuria, at Ku-pei-k'ou, which is the gateway to Jehol, at Kalgan, where the route leads up to Urga, at Yen-men-kuan and Feng-chen-kuan, the two passes in the almost parallel arms of the wall, which divide northern Shansi from Inner Mongolia, and at Chia-yü-kuan, where the western road passes out of China proper to Mongolia and Turkestan. All these gateways were strongly fortified and most of them are situated at mountain passes difficult of access and comparatively easy to defend against invading armies. Besides these principal gateways there are several minor gates, built at various times and all provided with fortifications where garrisons were stationed. Of essential importance for the defence were the towers which, no doubt, since the earliest times were built partly of stone

¹ Cf. W. E. Geil, *The Great Wall of China*, London, 1909, pp. 175, 327. Although the author travelled practically along the whole extent of the wall, he gives very few facts about it.

L. Newton Hayes, *The Great Wall of China*, Shanghai, 1929, p. 12. A short study mainly of the eastern section of the wall.

² *An Authentic Account of an Embassy from the King of Great Britain to the Emperor of China*, by Sir George Staunton, Vol. II, London, 1798, p. 183.

THE GREAT WALL

and placed at such distances that men with bows could cover the spaces between them.¹

The structure of the wall varies considerably at its different sections, depending partly on the nature of the surrounding country and the local material available for the construction, but also on the fact that some parts have been completely done over in later times, while others have been left to fall into decay. The most primitive part of the Great Wall is, no doubt, its western section in Shensi and Kansu, where it is simply a high mud rampart followed by a moat. The reason for this may be that bricks and building-stone were difficult to obtain in a barren desert country. Quite different from this are the more easterly sections of the wall, which also are better known and usually taken to represent the whole structure (Plate 1). Their outer appearance is practically the same as that of the best city walls in northern China. The core of mud, gravel, and stone (placed in successive layers) is here covered by several coatings of large bricks, bound together with strong mortar, the base is lined with well-fitted stone blocks, and the top terrace between the parapets is carefully paved, so as to prevent water to penetrate into the core. The sides are considerably battered, the width at the base being 7 or 8 metres, and at the top only about 5 metres; the height approximates the width at the base but rises sometimes to *ca.* 9 metres. The crenellated battlements which enclose the broad pathway at the top of the wall are nearly $1\frac{1}{2}$ metres high, and the towers of defence, which are situated at unequal distances, rise about $3\frac{1}{2}$ to 4 metres above the main body of the wall. These towers seem in many instances to be of a somewhat older construction than the wall itself; it is possible that they were built first and then connected by the running wall. Besides these there are somewhat higher towers standing inside the wall, at longer distances from each other, evidently used for observation rather than for defence.

The general principles of construction and the materials used in these eastern sections of the Great Wall are, indeed, as pointed out above, the same as, for instance, in the city walls of Peking, and there can be little doubt that these great masonry works were carried out at about the same time. They are both examples of the splendid defence structures accomplished at the beginning of the Ming period. This observation is also confirmed by the Chinese records which tell us about thorough restorations of the Great Wall during the reign of the early Ming emperors, who evidently felt the need of strengthening their northern defence-line against possible incursions of the newly conquered Mongols.

It is thus by no means correct to consider the main part of the Great Wall in its

¹ In the reign of the emperor Ch'êng Hua of the Ming dynasty (1465-1488), a general reported that he had twenty-five camps of soldiers, each containing from one to two hundred men, under his command to guard about three hundred miles of the wall. He considered that one soldier could guard about two hundred yards of the wall, and nine men would be sufficient to defend a mile of the wall. This statement of a responsible officer gives an idea about the defensive value of the wall in times when bows and arrows still were the invader's chief weapons of attack. The defence-force was supported by grants of land to the soldiers at the places where they were stationed. Cf. L. Newton Hayes, *op. cit.*, p. 15.

EARLY CHINESE ART

present state as an architectural achievement of the great Ch'in emperor, and we have, as said above, no means of controlling just how much of the wall was built in his time or what this construction looked like. Yet the general idea of this huge defensive barrier may be credited to him; it fits singularly well with what we know about the other plans and achievements of this great empire-builder. It was, indeed, one of the strongest means of bringing together the scattered parts of northern China and welding them into a defensive unity against a common enemy. The idea of the Great Wall is by itself even more impressive than the actual structure. It is, taken as a whole, the most overwhelming and monumental expression of the deep-rooted veneration of the Chinese for encircling walls. The best parts of it make a truly magnificent architectural effect. The wall seems to be an organic growth out of the landscape, it rises like a natural crown over the bare mountain slopes, great and unified, yet highly varied, owing to its rhythmic divisions by parapets and towers and to its serpentine movement winding into a distance where no human eye can follow it.

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Walls, and more walls, constitute, so to speak, the skeleton or groundwork of the Chinese community. They encircle it; they divide it up; and they dominate it more than any other structure. There is no real town in China which is not surrounded by a wall, as also appears from the fact that the Chinese use the same word, *ch'eng*, to designate a town and a town wall. A town without a wall is for them as inconceivable as a house without a roof.

The earliest "walls" were simply mud ramparts, and they still serve as defensive works round many villages in northern China, but in later times they began to cover them with brick, which was laid in several coatings, over a body of successive layers of stone, gravel, and clay (Plate 2 A, B). (In the city wall of Peking one can distinguish five to six layers of brick facing.) Thus the walls often became not only the most important, but also the most permanent and most imposing structures of Chinese towns. It is above all these powerful girdles which impart a unified and monumental architectural character to otherwise quite inconsiderable and poorly built "towns." The naked brick walls, with their bastions and towers rising above a moat over the bare surrounding country, have more to tell of the ancient glory and greatness of these old places than any other structures. Even if they are not of a very early date, they have acquired an appearance of antiquity owing to the weathering of the bricks and the decay of the crowning parts (Plate 3 A, B). Where repairs or reconstruction have been undertaken they have not as a rule occasioned any considerable change in the architectural appearance of these walls.¹

¹ Cf. Sirén, *The Walls and Gates of Peking*, London, 1925, pp. 1-52.

SACRIFICIAL ALTARS AND TERRACES

There are a number of architectural monuments in China which, from a constructional point of view, are closely related to the walls, but none of them can be said to constitute such a fundamental feature in the general architectural aspect of the country as the walls around the compounds, the villages, the cities, and the whole realm. Some of these monuments, like the high terraces on which the gate towers and pavilions stand, are so intimately connected with their superstructures that they must be illustrated in connection with these wooden buildings, while others, like the pagodas and houses built of mud and brick, form a group of their own which will be discussed as a part of the general masonry architecture in China. It may, however, not be out of place to introduce here a few observations about the sacrificial altars and terraces, because these perpetuate the most primitive form of religious architecture in China and also because they represent, from a constructional point of view, a type of building which, indeed, may be said to be of fundamental importance in the architecture of the Far East.

The earliest records about the Chinese settlements make it clear that the main hall of important family dwellings was flanked on the one side by the altar to the god of the soil (Ti t'an) and, on the other side of the courtyard, by the ancestral temple.¹ These altars were in older times simply mounds or terraces of mud, on which the sacrifices were performed, but gradually they developed into more permanent stone-lined platforms adjacent to the residences of ruling princes or those who had the right of offering sacrifices to the great divinities of nature. In later times when these rights were transferred to the one great ruler, the Son of Heaven and spiritual father of the nation, the altars dedicated to the spirits and gods of nature became pre-eminently attached to the Imperial palaces, though, indeed, there were also other places of sacrifice, as for instance, the Five Sacred Mountains, to which the emperors from time to time made pilgrimages.

The gradual development of the primitive mounds or altars to the god of the soil into monumental terraces, at which sacrifices were performed to various nature divinities, is a question of religious history which here must be left out of discussion; we are only concerned with the monuments still existing and their architectural appearance. The fact that there are still such open-air altars and that the sacrifices were continued during the whole run of Chinese history, in spite of many sweeping religious innovations and reforms, is in itself a remarkable proof of the fundamental importance of these places to the Chinese people. These altars typified, so to say, the emperor's position as the spiritual head of the people, and the great sacrifices which were performed here, either by himself or by his representatives, were the means by which the life of the nation was brought in harmony with the guiding powers and the inherent laws of nature.

¹ Cf. H. Maspero, *La Chine Antique*, Paris, 1927, p. 24.

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Altars for such sacrifices existed at all the Imperial capitals of China, and they were, as a rule, placed just outside the boundary of the city. When there were two, as during the Han dynasty, the one dedicated to the powers of Heaven was on the south side of the city, while the other, which served for sacrifices to the spirits of the Earth, was on the north side. In later historical times all the Imperial sacrifices to the great powers of nature seem, however, to have been performed at one altar, and such was still the case when the Ming emperor Yung Lo re-established the capital at Peking (1420). One great altar for the Imperial sacrifices was then erected outside the southern wall of the capital and it became known as Huan chü (the Round mound). It was only about a century later in the ninth year of Chia Ching (1530) that it was decided, after a thorough historical investigation by a commission of learned men, that separate altars should be erected not only to Heaven and Earth but also to the Sun and the Moon, the spirits of harvest and grain, etc.¹ It was thus about this time that the several altars, dedicated to various nature divinities, which still exist in and around Peking, were established. Most of them have been restored or rebuilt in later times, particularly during the reign of Ch'ien Lung, who was an ardent supporter of the old ceremonies, but their general character and shapes have remained practically the same as in the time of Chia Ching.

The largest and best known among these altars is the T'ien t'an, or Altar of Heaven, which is situated south of Ch'ien men in the "Chinese city," formerly a suburb of the Imperial capital. The whole enclosure is of vast dimensions, being nearly $6\frac{1}{2}$ kilometres in circumference; within this is a second enclosure measuring over 4 kilometres, most of the space is planted with trees but there are also a number of buildings for ceremonial purposes which cannot be described in this connection, as we are only concerned with the "altar" proper on which the sacrifices were performed. This is enclosed within double walls, the outer one forming a square, the inner one a circle; decorative gateways in the shape of marble *p'ai lou* are placed at the four main directions. The circular "altar" is arranged in three terraces, of which the lowest one is 64 m. in diameter and 1.50 m. high, the second one 46 m. in diameter and 1.60 m. high, and the top one 28 m. in diameter and 1.70 m. high. The full height of the altar is thus 4.80 m. All the terraces are covered by white marble and enclosed by sculptured balustrades of the same material, designed according to the same pattern as we find at other Imperial buildings in Peking (Plate 4 A). If they have been made over in Ch'ien Lung's time, it is evident that the original plans and design were faithfully copied. The decorative effect of the marble terraces with their richly sculptured balustrades, rising stepwise towards the blue sky, is dazzling, particularly as their shining whiteness is emphasized by the surrounding walls, which are red with deep blue tiles on the top. The architectural framework of the present Altar of Heaven can thus by no means be called

¹ The historical data concerning these altars are given in the well-known description of Peking, *Jih hsia ch'iu wen k'ao*, first published on Imperial command in 1774. Further information about their plans and architectural composition may be found in the valuable monographs by G. Bouillard, which form *Quatrième et Cinquième série* of *Pékin et ses environs*, Peking, 1923.

THE ALTARS

primitive, but the general idea, shape, and secluded situation of this sacred platform reflect very early religious traditions. The great temple buildings which stand within the same enclosure are altogether architectural creations of a later period to which we will return in another connection.

The direct counterpart of the Altar of Heaven is the Altar of the Earth, situated outside the northern wall of the city. It was originally called Fang ch'ê (or chai) t'an (the Square mound), but the name was changed in 1534 to Ti t'an. Like the Altar of Heaven it is placed within a large double enclosure, but this is strictly square, and the same shape is characteristic of the main altar which thus reflects the ancient Chinese idea about the shape of the earth. It rises in two terraces, the lower one being 32 m. on each side, the upper one 17 m. square and 1.20 m. high (Plate 4 B). Around the altar is a kind of moat, about $2\frac{1}{2}$ m. wide, which was filled with water, and on the east and west side of the lower terraces are two small stone niches or altars on which the spirit tablets of the sacred mountains and rivers were placed at the time of the sacrifices. The lining of the sides of the terraces is made of yellow tiles (the colour of the earth), but the pavement consists of grey stone slabs. Four pathways, marked by successive marble p'ai lou, in the double walls which enclose the terrace, lead up to the altar from the four directions, terminating in broad stairs without balustrades. The general effect is quite simple but dignified and harmonious, except for the ugly balustrades of grey bricks which in recent years have been added around the moat and the lower terrace. Of the adjacent ceremonial buildings, one, the Chai kung or Palace of Abstinence, is still in good shape, but the others have been spoiled by the soldiers who have been quartered there.

The Altar of Agriculture, Hsien Nung t'an, which is dedicated to the first farmer of China, Shen Nung (supposed to have taught the people the use of the plough), is situated opposite the Altar of Heaven in the former southern suburb. A good portion of this vast enclosure is now utilized as a public park, and some of the ceremonial buildings have become tea-houses, but the two altars on which the sacrifices were performed are still to be seen, though in a rather abandoned state. These were originally known under the name of Shan ch'uan t'an, altars to the spirits of the Mountains and the Rivers, but the name was changed in 1532 to Shen ch'i t'an, altars to the spirits of the Earth. Sacrifices were performed here in connection with the ceremony of spring ploughing, when the emperor and certain high officials would put their hands to the plough, and they were mainly intended for obtaining rain and good harvest. One of the altars was thus dedicated to the spirits of the Winds and the Rains, Fêng yü t'an, the other to the spirits of the Five sacred mountains and the Four rivers. The first is a square platform, about 15 m. on each side, and $1\frac{1}{2}$ m. high. Adjoining it on the northern side stand four small stone monuments, ending in the shape of truncated cones and hollowed out with niches (Plate 5 A). They are beautifully carved with cloud designs appropriately suggesting their use, which was to support the spirit-tablets of the winds and the rains. The other altar (Ti ch'i t'an) is a rectangular platform, measuring 20×30 m., and also provided with broad stairways of nine steps on each side. Five stone monu-

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ments of a similar shape as those mentioned above, though somewhat larger, stand on its south side and two respectively on the western and the eastern side (Plate 5 B). They are carved with reliefs representing mountains and rivers and, as they are shaded by wonderful old pine trees, they add a great deal not only to the spiritual significance but also to the harmonious beauty of the place.

These were, however, not the only places where sacrifices were performed in the Ming and Ch'ing dynasties with a view to obtain a good harvest. There was another altar, erected within the precincts of the Imperial palace as a kind of pendant to the T'ai miao (the ancestral temple of the emperors), called Shih chi t'an, or altar to the spirits of the Soil and Harvest, which served the same purpose. It is still to be seen in the present "Central Park" of Peking, and is of particular interest in so far as the platform, which is of the usual height and square shape, is not paved with stone but covered with five differently coloured kinds of mud, i.e. yellow in the centre, black to the north, red to the south, white to the west, and green to the east. The wall which encloses the altar is provided with roof tiles of the corresponding colours on the four sides.

Outside the eastern and western walls of the city respectively stand the altars of the Sun and of the Moon, at which sacrifices were offered to obtain the protection of these celestial bodies. The former, Jih t'an, has a round enclosure, though the central platform is square; the latter, Hsi yüeh t'an, dedicated to the evening moon, is surrounded by white walls with light green roof-tiles forming a large square. Both are now in a state of utter decay (Plate 6 A).

Somewhat smaller, though on the whole in a better state of preservation, is the Hsien ts'an t'an, the altar to the first breeder of silkworms, at which the yearly ceremonies were performed, not by the emperor or his depute but by the empress, who was the highest protector of the sericulture of the empire. The altar is an ordinary square stone-lined terrace with four flights of steps, but it makes a particularly appealing impression as it is situated in a row of old mulberry trees at the northern end of Pei hai (Plate 6 B). Adjoining it stands the Ts'ai sang t'ai, the terrace for gathering of mulberry leaves, and a little further to the north, within a separate enclosure (now made inaccessible), are the Yü ts'an ch'ih, the pool for washing the silkworms, and the Ch'in ts'an tien, the hall where the empress paid homage to the first breeder of silkworms. The buildings are of comparatively late date, but in their beautiful setting they form a most attractive ensemble; the whole place retains something of the intimate feeling for the life of nature which originally inspired the erection of all such open-air "altars."

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These sacrificial platforms or terraces have, however, an architectural significance besides being beautiful remains of the ancient religious traditions of China. No building of any consequence in China was erected without the support of a terrace, and the more important the building, the larger and finer the terrace. The great temples and palaces often stand on terraces in two, three, or more storeys, while

TERRACES

the common dwellings have simple stone-lined platforms ascended by one or two steps. This feature may, indeed, be noticed at most of the buildings illustrated in this volume, but a few special examples of terraces and their adjoining ramps may be of interest in this connection.

The shapes and outlines of the terraces follow, as a rule, those of the buildings; they may thus be rectangular, square, or round, and their height is dependent on the formation of the ground and the particular character and purpose of the superstructures. Ordinary house terraces on flat ground may be less than a metre in height, while those which are erected on slopes or as substructures for towers and the like, may have façades of ten to twenty metres. They become akin to the bastions or defence-towers of the walls and are also constructed in the same fashion, i.e. with a core of mud and gravel and several outer coatings of brick.

We will have occasion to return to some of these towers in another connection, but here should be pointed out a particularly imposing example of such terraced buildings⁸: the old fort connected with the Great Wall at Yü-lin fu in northern Shensi (Plate 7 A). It is a square structure in three storeys, measuring at the base about 28 metres on each side, the full height not being quite equal to its width. The lowest storey is provided at the back with a gangway hollowed out in the mud, but the upper storeys are accessible only by means of outside ramps. The smooth battering walls were originally provided with battlements, but these are now almost gone, and nothing but the bulk of the structure remains, i.e. three terraces, the one on the top of the other, but this is enough to make it a singularly monumental structure. It may be classified with the famous stepped pyramids of ancient Babylonia and Central America, though the effect of it is still more austere as it rises above the drab desert-like plain of the endless sand-dunes.

It may also be remembered that terraces are, indeed, a most common feature in a country where nature itself builds such formations in the loess soil. Innumerable slopes in northern China are terraced either for the purpose of cultivation, or for the erection of dwellings, which usually also are made of hard packed loess (forming a kind of cement), if not simply hollowed out like caves in the mountain side. Such dwellings may hardly be described as architecture in the proper sense of the word, but the terraces on which they stand constitute an important feature in the general architectural aspect of northern China. The step from these loess formations to the stone-lined terraces on which the mountain temples stand is not very long, though the latter receive a more definite architectural character and development through the enclosing balustrades and the long staircases by which they are ascended.

The architectural importance of the terraces in China is, indeed, of such a fundamental kind and wide range that it is hardly surpassed by any other feature of Chinese architecture unless it be the roofs (Plate 8 A, B). This may not be realized at the ordinary minor dwellings, which stand on low platforms, but when we approach the temples and the palaces, we are at once impressed by the unparalleled beauty and greatness of these substructures. They are spread out in front of the buildings, they are raised in several storeys or steps, they are faced with white marble

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and encircled by sculptured balustrades of the same material. Broad flights of steps with a central section of dragon-slabs form the ascent, and rows of dragon-heads project from the upper cornice of the terrace, serving as rain-spouts. They form thus at the same time a decorative support and a contrast to the red wooden buildings.

Most of these palatial marble terraces still preserved in northern China are of the Ming or later times. We find them particularly well developed in the Forbidden City in Peking, at the Altar of Heaven, at the Ming tombs (Plate 9 A), and other Imperial buildings, where they usually are embellished with sculptured details. But there is at least one important terrace which dates from an earlier epoch—the famous Lung t'ing (or Lung t'ai) in K'ai-fêng, considered to be the substructure of a palace of the Sung period. K'ai-fêng or P'ien-liang, as the place then was called, was the eastern capital during the Northern Sung and the Chin dynasties and contained a number of Imperial palaces. The terrace has no doubt been restored in later times but the decorative sculptures still to be seen here bespeak of its early date (Plate 10 A, B).

The central portion rises nearly twenty metres above the ground and is ascended by a long stepped slope (supported by vaults), with an Imperial pathway in the middle, decorated with dragon and cloud reliefs in a distinctly pre-Ming style. They are not executed in marble, as at the Peking palaces, but in grey limestone, and the same material has also been employed for the balustrade at the top of the battering brick walls. The pavilion which now crowns this substructure is of much later date. At both sides of the central portion are somewhat lower wings, built up stepwise by a series of terraces, diminishing towards the top, and these can be ascended by separate flights of steps, which may be of later origin. Through this combination of a bastion-like middle portion and stepwise rising side portions, the whole composition becomes more interesting; it impresses us not only by its bulk and massiveness, but also by its excellent proportions and effective contrasts of vertical and horizontal lines.

The usual ascent to the high terraces, bastions, and walls, is made by a sloping avenue without steps, which the Chinese call "ma tao," thereby indicating that it also is intended for men on horseback. Such ramps were necessary particularly at the defensive structures, to which sometimes heavy loads had to be transported. To make the ascent easier they are often paved with flights of very low inverted steps.

At the temples and other buildings which climb the mountain sides the sloping approaches are laid with steps of carefully fitted stone slabs, and enclosed by balustrades which may be more decoratively developed. Their long ascending lines form an effective contrast to the horizontals of the terraces, particularly when these rise in successive storeys the one above the other. Their development depends, of course, on the situation and the formation of the ground, but they follow, as a rule, straight lines, either along the façade of the terraces or in right-angles to them (Plates 7 B, 11 B). Curving stairways are very seldom used, except as picturesque features in garden compositions, where they lead up to rockeries or small pavilions.

STAIRWAYS

Excellent examples of such long, straight flights of steps may be seen at Pi-yün ssü in the Western Hills and at Yung-an ssü in Pei hai. As the main temple buildings are erected along a straight axis on the mountain slope, the communicating stairways form a kind of "heavenly ladder," which becomes steeper and steeper towards the top (Plate 12). Decorative p'ai lou mark the successive stages of the flights of steps and break the monotony of the long ascending lines. From some of the terraces side-ramps are leading up to adjoining buildings, usually less steep and laid in right-angles to the main axis (Cf. Plate 11 A, B). By such a combination of stairways leading in different directions the architectural composition becomes, indeed, more interesting, yet it is hardly ever developed in a decorative sense or treated in such a monumental fashion as the stairways of the Italian gardens and villas of the Renaissance. The Chinese stairways are strictly utilitarian structures, their general aspect is quite simple; if they nevertheless sometimes produce a monumental impression, it depends rather on their size and situation than on purely architectural considerations. The most overwhelming examples of such long stairways are also not those which lead up to the temple terraces but the stepped roads which for miles and miles follow the slopes of sacred mountains such as T'ai shan or Sung shan. They are laid in closest accordance with the natural formations of the ground, and may be remembered as examples of the oft-mentioned general tendency in Chinese architecture to co-operate with nature.

The only stairways in China often accorded a more decorative architectural treatment are those which form the ascent of the two or three storeyed terraces of the Imperial palaces and temples. They are built entirely of white marble, their balustrades are richly sculptured and terminate in volute shapes at the foot of the steps. Their great width (in proportion to the height) and their gentle slope give an impression of commodity and ease. The steps are low and deep, necessitating a slow and measured ascent; sometimes they are actually sunk in between paved roads on both sides, as may be seen at the upper parts of the ramps leading up to Wu môn, or divided into two flights by a raised road in the middle (Plate 13 A). This is the usual arrangement at the central stairways of the Imperial palaces, and here the middle section is decorated with dragons and clouds or phoenixes in high relief, symbolical of the ruler and his consort, who were carried in palanquins over these sculptured pathways (Plate 13 B). By the decorated slabs something is added to the sloping effect of the stairways: they seem to be spread out rather than built up, and covered by a thick carpet with animal patterns in relief.

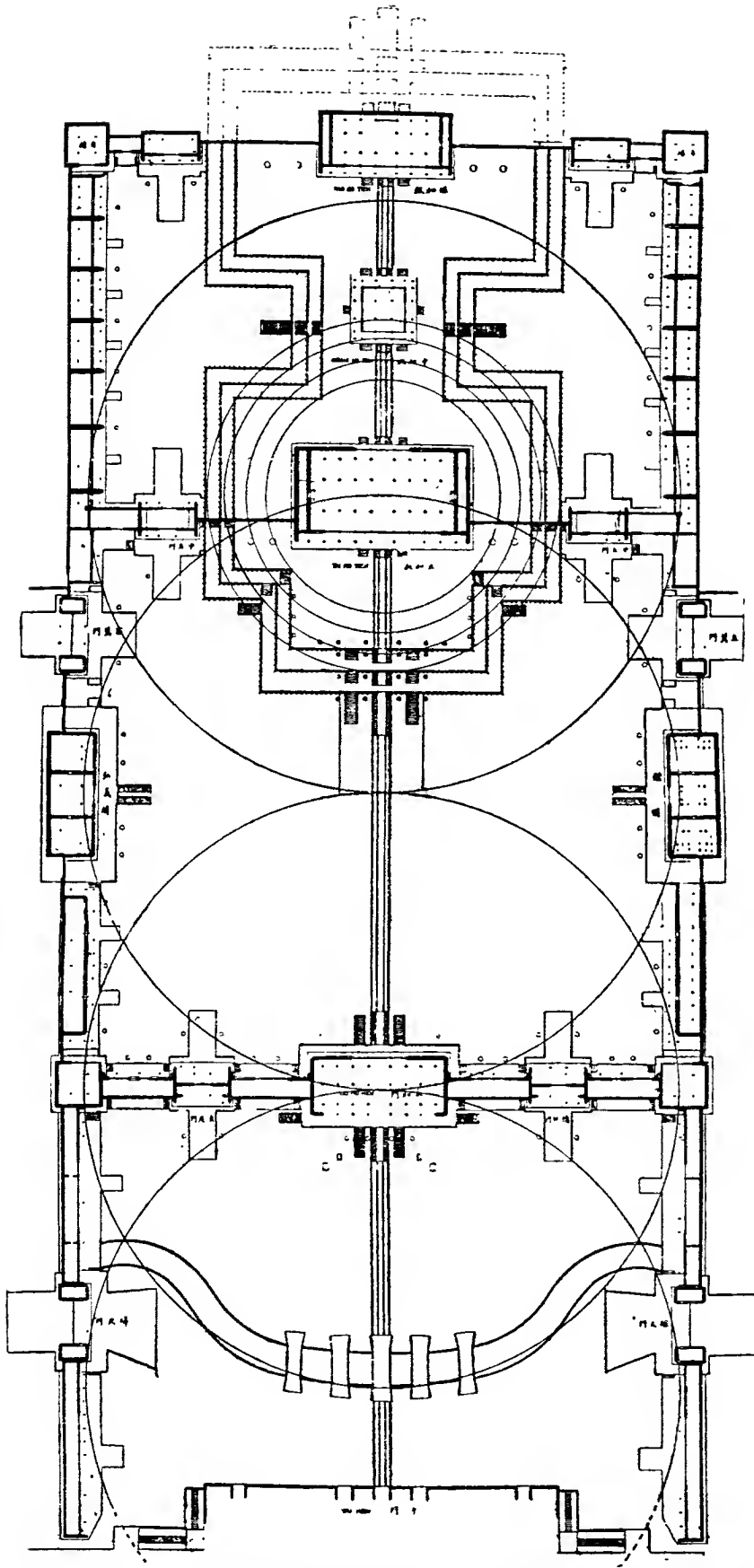
These stairways form integral parts of the terrace structures but are seldom found elsewhere than at the Imperial buildings. Their use is strictly limited, but in Imperial capitals, like Peking, they are, indeed, a most striking architectural feature and a fitting introduction to the lofty porticoes of the great temples and palaces.

THE WOODEN BUILDINGS: THEIR PRINCIPAL TYPES AND CON- STRUCTIVE FEATURES

The still existing monuments of Chinese architecture are for the most part, as already stated, of comparatively late date, and it would thus hardly be appropriate to review the material from a chronological point of view. We will, however, in a later chapter, present some observations about the development of certain elements in Chinese architecture, but before attempting this it might be well to seek to obtain some perspective of the general principles of design and construction which since very early times have been followed by the Chinese builders. In doing this we can dwell only on the most elemental features of the buildings without entering into technical problems or into the differences which are characteristic of the buildings of various provinces. A full survey of the material would, indeed, necessitate a discussion of the monuments of each province separately, but this could only be done in a series of publications based on more extensive studies than we have been able to carry out. Our material has been gathered mainly in the northern and central parts of the country and may be said to represent an average standard of Chinese architecture, but by no means all the provincial variations.

The plan of the larger architectural compositions in China, be they temples, palaces or family dwellings, is always characterized by a strict adherence to a main central axis which, whenever not obstructed by insuperable natural difficulties, is laid in a straight line from the south to the north. This seems to have been the rule already in prehistoric times, as appears from the descriptions of the palaces of the Hsia and Shang dynasties, and the principle was faithfully followed all through the ages for religious as well as practical reasons. The principal buildings were always placed in a row, the one behind the other, and preceded by spacious courts, enclosed at the sides by secondary buildings, and at the front by walls with large gateways, which at the palaces and temples became real porticoes or halls on raised terraces. All the façades of the most important buildings thus faced the south, an orientation which probably rested on religious traditions. The central axis may, in the case of larger architectural compositions, be accompanied by side axes along which minor buildings are arranged according to the same scheme, but these are always parallel to the central flight; the only buildings which stand at an angle to this are the side gates, store-houses and galleries, which serve to enclose the courts.

It was by the multiplication of the court units or court quarters that the compounds were enlarged, not by indefinite extension of individual buildings or by adding to their height. There are princely palaces in Peking which have as many as twenty courts, and some of the old monasteries or temples may have had even more. The whole complex is surrounded, as has been said, by a high wall, which makes it



Plan of *San ta tien*, the three great ceremonial halls of the Forbidden City, Peking, drawn by Albin J. Stark, with inscribed circles showing a system of proportions.

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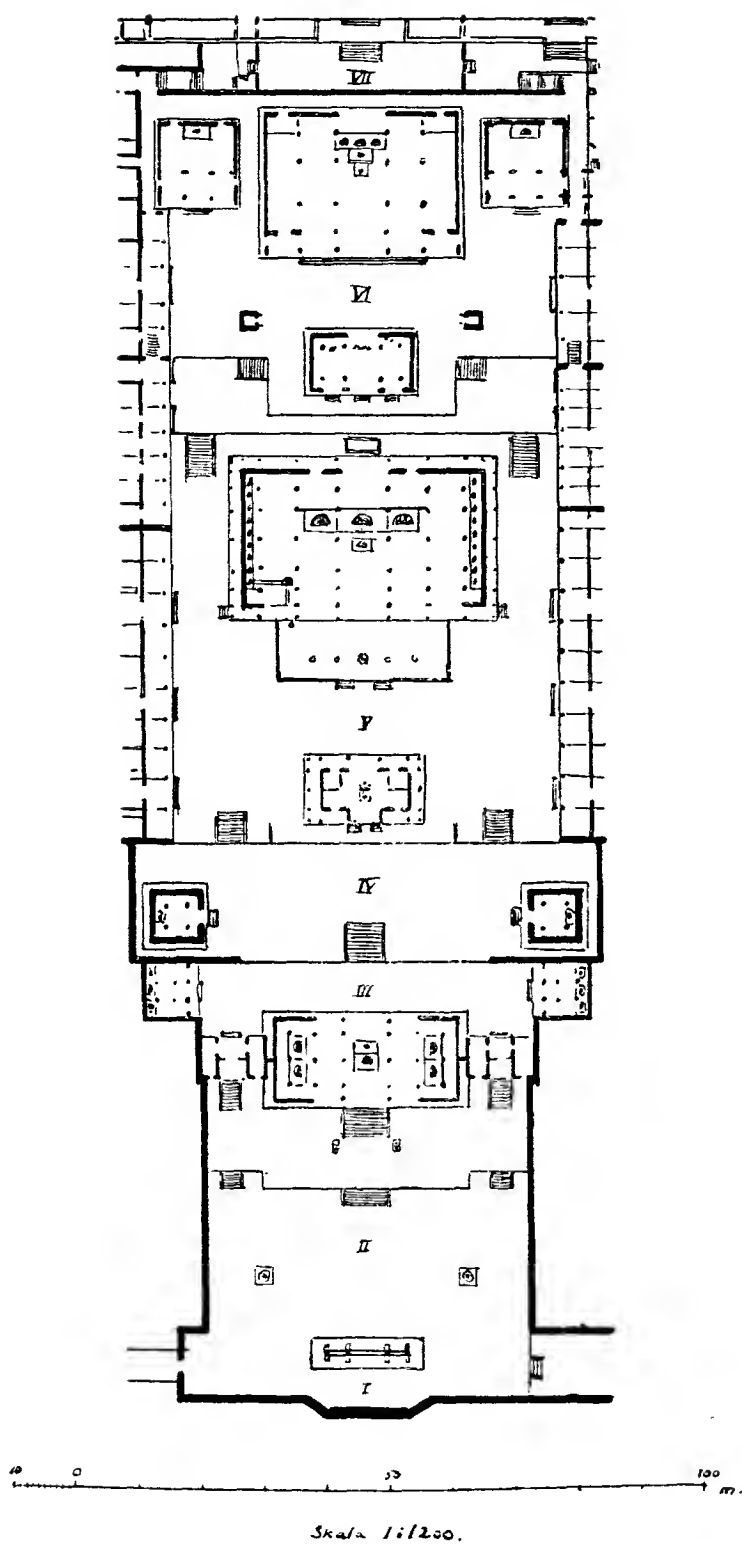
impossible to observe the establishment from the outside, and in the larger palaces even the different court units are divided from one another by secondary walls with decorative gateways. When these are closed the compounds become, indeed, "forbidden cities," not only for outsiders but also for many of the people who were constrained to stay in the different quarters of the palace.

The architectural types of the buildings remained also essentially the same, whether they were temples, palaces, or minor dwellings. The most important of these types is the hall, *tien*, an oblong rectangular room, usually divided by rows of round pillars into three or more naves, of which the foremost often is treated as an open portico, unless there is a complete colonnade encircling the building (Plate 14 A, B). Such structures were, however, also erected on a square plan and in special cases, which will be discussed later, in polygonal or round shapes. The lighting is usually only from the front, i.e. through the upper portion of the doors and some low windows, which are divided up by trelliswork and covered with more or less translucent paper (nowadays often substituted by glass). In larger buildings with two-stepped roofs an upper row of windows may be added between the two storeys of the roof, but in ordinary low houses the side-walls have no openings, whereas the back rooms may be lighted by doors and windows at the rear wall. In the square halls all the four sides may be treated equally as façades with openings.

The buildings stand, as already said, on a terrace, usually lined with brick or stone, which may be variously developed according to the importance of the building. When the terrace is made very high a special type of building is created, which is known as *t'ai*, a smaller hall, often in two storeys, which may become more or less tower-like, if the vertical dimension is emphasized (Plate 15). Such buildings have been used in China in all ages, particularly for defensive purposes. The type is perpetuated in the bell and drum towers and in the inner towers of the big city gates, but there are also many temples placed on such high substructures, to which one ascends by outer ramps or flights of steps.

The common name for larger halls of several storeys is, however, *lou*, whilst smaller buildings of two or more storeys are often called *ko*, and the small open pavilions *t'ing*. In addition to these may be mentioned the *lang*, galleries which are open on one or both sides and serve to connect larger buildings, particularly when they are arranged around gardens or courtyards. Still further variations of the hall and pavilion types might be mentioned, but they diverge more in decorative detail than in their fundamental form and construction, and may, therefore, here be disregarded.

Practically all these buildings, be they *tien*, *t'ai*, or *t'ing*, differ fundamentally from Western architecture by the fact that it is less the walls than the terrace and the overhanging roof which are decisive for the outer appearance. The main structure is made of wood; it is pure carpenter's art, the brick and mortar walls may appear solid and sustaining, but they have, as a rule, very little structural importance. They are simply filled in with brick and clay between the carrying pillars, and are pushed into the shadow between the eaves of the far-projecting roof above and the broad

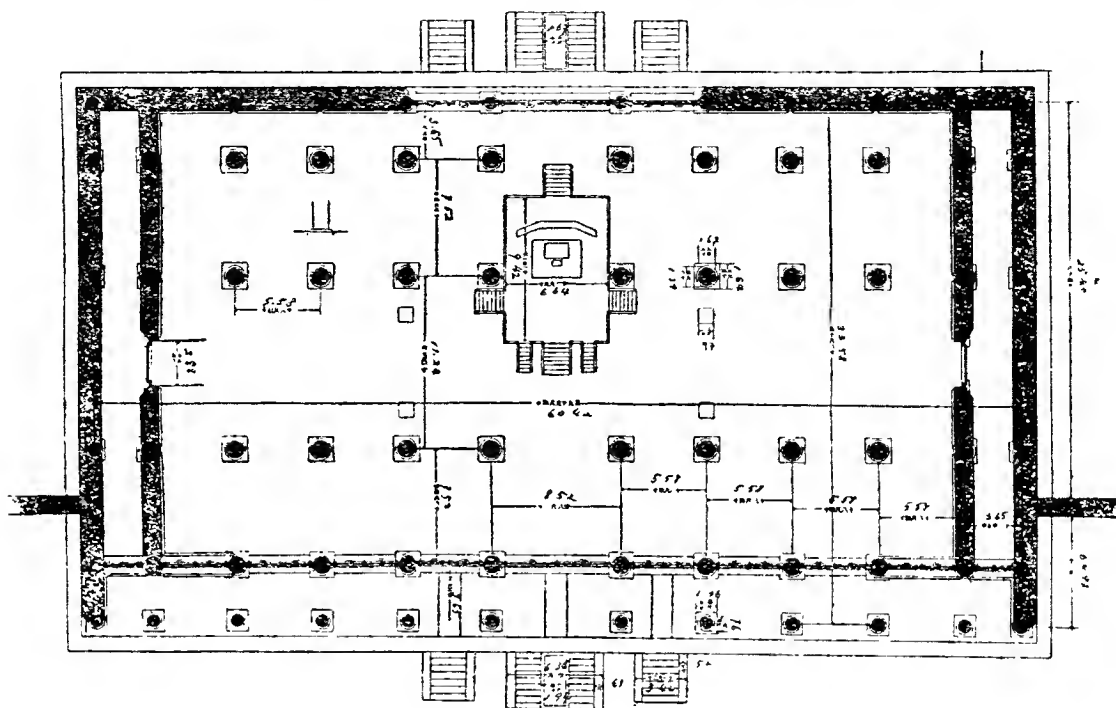


Typical plan of a Buddhist temple. After Boerschmann, *Chinesische Architektur*.

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terrace below. At large buildings the façade wall is as a rule not in the outermost row of pillars, which is reserved as a portico or open gallery, still more emphasizing the openness of the structure and the play of light and shade. At smaller houses the portico may be limited to a few pillars at the middle portion of the façade, which, however, produces a similar impression.

The buildings thus consist really of a number of naves and transepts, of which some are partly or wholly divided by the filled-in walls in order to create rooms, which



Plan of T'ai Ho Tien in the Forbidden City, Peking.

may be increased or diminished, as required. It should be noted, however, that the naves are not all equal ; the distance between the pillars, which is generally rather wide, varies considerably and it sometimes occurs that certain pillars are omitted in the middle of a building, if more open space is desired. As a rule the middle transept is characterized by the greatest distance between the pillars. It is here that the entrance is situated and it is this which indicates the orientation of the building. The hall extends, as it were, on both sides of the central axis, which is emphasized by placing the entrance in the centre of the long side ; it does not extend longitudinally, as do our classical columnar buildings.¹ The gables have no other function than to terminate the long hall ; they lack every architectural emphasis (in direct contrast to Greek structures), and are in many cases not even intended to be seen. Sometimes the walls are drawn outside as a kind of *antæ*, framing the colonnade of the façade ; in other cases the distances between the pillars are

¹ Cf. Boerschmann, *Chinesische Architektur*, I-II, pp. 19-24. Berlin.

COLUMNS AND BRACKETS

increased or reduced arbitrarily in order to emphasize the corners of an encircling colonnade. The Chinese were never so consistent in the rhythmic spacing or in the placing of the columns or round pillars as were the classical builders. They worked in a material which allowed of much greater freedom than did the marble architrave, and they paid less attention to the laws of artistic proportion than to practical needs and technical traditions of long standing, by which, however, a remarkable logical clearness in the framework of the building was obtained.

The comparative freedom in the placing of the pillars is rendered possible by the fact that they are not architectural features in the same sense as the classical columns. They are not furnished with capitals and do not carry an entablature, but are tied both longitudinally and transversally by beams which cut into or run through the pillars; the longitudinal beams constitute a sort of architrave which holds together the exterior pillars. Sometimes, on larger buildings, there are, under the latter, ornamental brackets, issuing from the pillars and apparently supporting the "architrave," but the real bracket system, supporting the eaves, is above these beams. These roof brackets have, as a rule, three arms and in earlier buildings they project from the square covering boards of the pillars. Their function was to support the lowest purlin, but later they were manifolded with great freedom and placed on the architrave beam as well as on the posts, sometimes so close together that they almost acquire the appearance of a cornice, but thereby they lost their structural purpose and became a purely decorative addition to the building. We shall have occasion to notice this in our discussion of the historical development of Chinese architecture, as also the multiplication of brackets into a sort of "roof-beard."

As a result of this constructional system, the buildings developed, as has been said, horizontally rather than vertically. Yet many of the large halls are erected in two storeys, though the upper storey usually is only a decorative superstructure without a floor. The lower storey then has a lean-to roof, which may form a sloping collar round the whole building or may be confined to one side. This method of building permits of considerable variety in horizontal and vertical division, whilst the constructional principles remain unchanged.

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THE ROOFS

The marked development of the roof on Chinese halls is due, as has been said, to the fact that the entrance is not placed at one of the gable-ends, but in the middle of the south façade, the importance of which is brought out not only by the gallery or open portico of free standing pillars, but also by the wide sweep of the roof. The buildings are, as a rule, so designed and so situated that they can only be appreciated from the front, their imposing effect arises primarily from the lofty and deeply curved roof (Plate 16 A, B). Whatever may have been the origin of this peculiar roof form, it seems certain that once its decorative effect was appreciated, it was developed

EARLY CHINESE ART

deliberately at the expense of the main structure. The need may have been felt to counterbalance the impression of breadth and weight produced by these enormous roofs by swinging the sides and accentuating the rising and falling rhythm of its lines. When fully developed, the roof became apparently liberated from the supporting frame, since the more expansive it is, the deeper becomes the shadow under the eaves, the more freely it appears to hover over the supports. It is then less a cover than a crown on the building, and its abundant ornamentation with figural tiles at the corner-ribs and the ridges contributes also to strengthen this impression.

The furthest development of this peculiar roof-form is to be observed on the buildings in southern China; it evidently had deeper roots here than in the north, and answered particularly well to the practical and climatic conditions of this part of the country. It may indeed have arisen from the overhanging wide straw roofs of the primitive thatched huts of a type which still may be seen in the Indonesian islands.¹ It is essentially foreign to the most northern provinces, where primitive dwellings were made of loess soil, and may not have been in use in this part of the country until historical times, when closer relations were established between the north and the south. Then it was introduced on important buildings, like palaces and great temples, with a view to enhancing their loftiness, whereas ordinary dwellings, shops and the like, in the northern provinces hardly ever were covered with roofs of a particularly decorative or deeply swung form.

These gradual differences in the shape of the roofs appear quite clearly from our illustrations. The street views from Si-an fu and Peking show buildings covered by low-gabled roofs with almost straight slopes. They project enough to shade the little portico of the façade, but they usually have no curvature and no brackets. The great halls of the Imperial palace as well as the important temples and similar buildings, have roofs which curve considerably and project far over the long sides of the buildings, the eaves being supported by many rows of brackets, but the ends of the corner ribs do not point upward. Quite different is the character of the roofs on the temples in Su-chou and Hang-chou; they are not only exceedingly large and richly decorated, their corner-ribs curve very boldly and point upwards at the end like raised snouts or trunks (Plate 17 A, B). This is the "hovering roof" *par excellence*, which particularly on smaller pavilions may suggest spread out wings (Plate 18 A, B). A still further development of the curvature of the roof lines may be observed at some temples in the neighbourhood of Amoy, at Ch'üan-chou (the old port Zaytun, which, in Marco Polo's days, was "one of the greatest havens in the world"), on which the roofs are swung not only at the sides and corner-ribs but also at the main ridges, the whole shape being subject to a series of rhythmic curves (Plate 19 A, B). Other provincial differences could easily be quoted but the examples mentioned above may serve to illustrate the different tendencies of the roof constructions in the north and in the south.

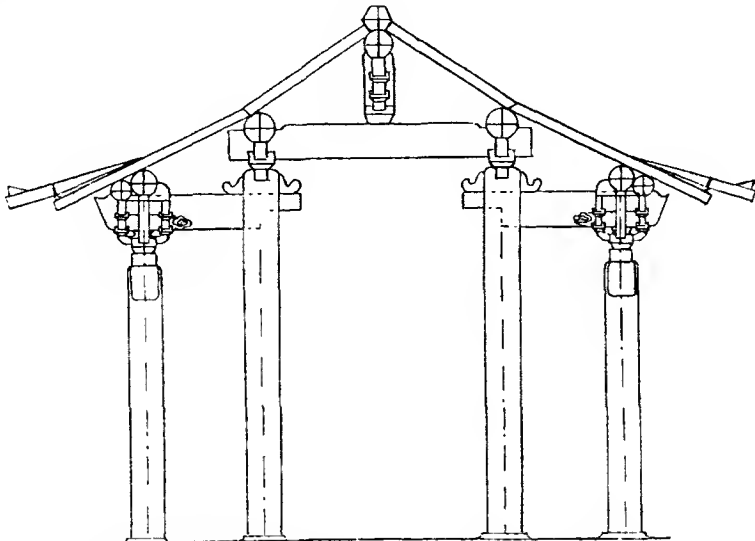
We have no means of ascertaining just when the far-flung curving roofs were introduced in central and northern China; it may be noted, however, that the repro-

¹ Cf. Boerschmann, *op. cit.*, p. 25.

ROOFS

ductions of Han buildings in clay models and in stone reliefs show roofs with quite straight slopes, while those of the T'ang period have well developed curves. And the more one wished to emphasize the decorative nature of the buildings, the more the roofs were curved and loaded with figurative and other ornamental tiles along the ridges and ribs.

These ornamental tiles play, indeed, a very important rôle in the outward appearance of the roofs. They are known under the name of *kuei lung tzü* (devil and dragon-like figures), and include all sorts of fantastic human and animal forms, often of a somewhat humorous type (Plate 20). They stand in long rows on the corner-ribs, which usually terminate in dragon-snouts, whereas the main ridge piece is provided at both ends with fish- or dragon-like figures, known as *ch'ih wen*, which were thought to protect against fire and other calamities. The roof tiles are alternatively convex and concave, thus producing a play of light and shade, which is of greatest importance for the general decorative effect. On ordinary minor buildings the roof tiles are grey,



The constructive framework of a house, according to *Ying Tsao Fa Shih*.

made of slightly baked clay, but on buildings of greater importance they are glazed and coloured. Thus all the palaces, temples, and the like, of the Manchu emperors have yellow glazed tiles, whereas temples erected for Confucius and princes of Imperial descent often have dark blue tiles, and many public buildings are covered with green tiles. The rules for the use of different colours have changed during the different dynasties, but the Chinese have always been very lavish in colouring their buildings both outwardly and inwardly. No reproductions in black and white can give a proper idea of the gay and festive appearance of these architectural creations.

The pillars and filled-in walls are always painted in a warm cinnabar tone, which becomes most beautiful when softened by age. The beams at the eaves and the brackets are adorned with conventionalized floral designs in blue and green, sometimes heightened with white (Plate 21 A). On the door-panels of important buildings the ornaments may be outlined in gold, and golden designs of clouds and dragons are also to be seen on the red-lacquered pillars of the great palaces and temples. When the tendency towards colourful decoration reached its height in the time of Ch'ien Lung, not only p'ai lou and pavilions but whole temples were entirely covered with glazed and brightly coloured tiles.

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The structural framework of the main roof consists as a rule of a series of beams placed stepwise over each other, on the ends of which the purlins rest. In smaller buildings all these transverse beams are supported by pillars, which increase successively in height, so that the middle one reaches up to the main ridge, but more commonly only the lowest (or the two lowest) beams rest directly on the vertical supports, whilst the upper ones rest on interposed supports which may have the form of corbel-like cushions or simply vertical struts (Plate 22). These stand directly under the purlins, which naturally must be arranged close together so that the rafters may be spliced in curves and the roof assume its concave shape. The marked upward curve of the far projecting eaves is achieved by bending or splicing two or more of the rafters. The support for this form of projecting roof was made in the earlier buildings, as has been said, by triple-armed brackets projecting from the pillars, and use was also made of a system of doubled rafters under the outer eaves (Plate 21 B). The upper rafters, which projected further than the lower ones, rested on these by the interposition of vertical supports, a construction which doubtless helped to lift the roof and make it appear to soar above the building. In a somewhat later period this construction was abandoned and instead the brackets were manifolded in successive tiers by prolonging a number of cross-arms on which the brackets grow like a richly sculptured cornice; and as it was indisputably simpler to allow the roof to rest simply on projecting beams, the whole system degenerated gradually into a purely decorative arrangement. It was replaced in later buildings by ornamentally carved beam-ends, as may be seen in many buildings of the eighteenth and nineteenth centuries.

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MANY-STOURED HALLS AND TOWERS

The ordinary Chinese *tien* is a one-storeyed building with a great horizontal extension in proportion to its height. It is, however, by no means unusual to find the larger halls covered by roofs in two storeys, of which the lower one extends further than the upper. This arrangement may have been developed mainly for decorative reasons, so as to make the proportions of the buildings less heavy, yet it has also a constructional importance, because it serves to divide the weight of the great roof. The upper storey, which usually has neither windows nor floor, is simply an addition to the main part of the building, while the lower one is the surrounding gallery which has been built in with walls and a lean-to roof. The pillars which support the main roof may be strengthened with transversal beams at the height of the lower storey. The main roof is either hipped or gabled, though the gables seldom reach down to the eaves. They are cut at half or less of their height, and below them continues the slant of the roof. This combination of hipped and gabled roof is the commonest form, but the most important large palaces and temple halls are provided with complete hip-roofs, slanting equally towards all four sides. It is, indeed, the most imposing and harmonious of the roof shapes used on Chinese buildings.

DRUM AND BELL TOWERS

Besides these halls with a blind top storey, there are, however, buildings which consist of two or three superposed halls. They must have been in use already in early times, as appear from the illustrations on Han reliefs, but they reached their greatest development in the eighteenth century. One of the most imposing examples of such many-storeyed halls is the Lung-hsing ssü (or Ta-fo ssü) in Cheng-ting fu, the temple of the enormous bronze Buddha (over seventy feet high), which is said to be a foundation of the Sui dynasty and which certainly existed in the Sung period, the statue being of that time (Plate 23 A). The still existing building is, however, a reconstruction of the forty-second year of K'ang Hsi (1703), and soon this, too, will be a heap of ruins. The fourth (top) storey has already completely fallen in, and the roofs of the lower storeys are quickly crumbling, as nothing is done to keep them up. In this case the interior was an open hall made expressly for the giant statue, but in other cases there are floors between the successive storeys, as may be seen at the lofty three-storeyed hall of the Hsiao-hsi-tien in Pei hai in Peking (Plate 24). This was probably erected in the Ch'ien Lung period, when Western architecture already had become known in China; it has three storeys, with open galleries of almost equal importance, the lower ones covered by lean-to roofs, the uppermost with a saddle-roof of comparatively modest proportions. Among other prominent examples of the same period should be remembered some of the halls of the famous Lama temple in Peking (Yung-ho kung), which originally was an Imperial palace but reconstructed for temple use and then provided with several two and three-storeyed halls (Plate 25). When the plan is less extensive and the successive storeys diminish not only in height but also in width towards the top, the character of the building is changed from a many-storeyed hall to a tower, and it becomes more like a pagoda. Quite suggestive in this respect is the Yü-hua ko in the Forbidden City in Peking, which was erected as a Lamaistic temple but architecturally holds a place between the halls and the towers (Cf. Plate 93 in Sirén, *The Imperial Palaces of Peking*).

Many of the inner gate towers as well as the drum and bell towers of the northern Chinese cities belong to the same class of buildings: they are two or three-storeyed halls, usually with balconies on projecting brackets around the main storey. The further the roofs project, the more the rows of brackets are multiplied, the loftier becomes the general effect. A characteristic example of such many-storeyed halls is the Bell Tower in Ta-t'ung fu, which was erected at the very beginning of the Ming dynasty (Plate 27 A). It is entirely a wooden construction (with filled-in walls) in three storeys, built according to the same principles as the wooden pagodas. Most of these towers are, however, raised on high terraces and thus become combinations of brick and wooden constructions which, particularly at the gates, may take on a more severe defensive character. The Drum Tower at Si-an fu may be quoted as one of the finest examples (Plate 26 A); it has two main storeys, the upper one with a balcony, and a blind top storey covered by a tent-shaped roof. The walls are filled in with plastered brick work, though the constructive frame is entirely of wood. The tower which dates from the beginning of the Ming dynasty gives an impression of strength and solidity, though not to the same extent as the

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famous Drum Tower in Peking, where the architectural effect of the crowning hall is almost subordinate to that of the monumental terrace. The building thus becomes closely akin to the massive brick constructions. Ordinarily, however, the two or three-storeyed hall dominates over the substructure, which is pierced by a big tunnel, as the tower always rises over the main street of the city. Quite typical in this respect is the Drum Tower in Hsien-yang in Shensi, which may date from the 17th century but hardly before (Plate 26 B). The supporting terrace is here simply a ground-storey to the wooden hall, and provided, like the main storey, with a lean-to roof. The square plan and the elegant proportions contribute to make this a very decorative tower.

The principal difference between the ordinary rectangular halls and those which are built on a square or polygonal plan lies in the shape of the main roof, which on the latter is like a tent instead of being hipped or gabled. Otherwise the principles of construction are quite the same; each side of the building has its supporting pillars tied by beams (be they two or more), they are all of equal importance, no special façade being emphasized except by a simple doorway. Sometimes the ground storey is square, while the upper storeys take on polygonal or round shapes, as may be seen, for instance, on the Kuei-hsing ko (the hall of literature) at the Confucius temple in Ch'üan-chou near Amoy (Plate 27 B). Being a building of the southern type, its roofs are far-flung with upturned rib-snouts, and as these are pointing in different directions in the successive storeys, the play of lines becomes unusually interesting.

The tendency to retain something of a square constructional framework even in round or polygonal buildings is on the whole a characteristic feature in Chinese architecture. A wooden building is always a hall or a pavilion, which must have at least four main supports tied by straight horizontal beams; the outward shape and the roof may be round, but that is simply an outward clothing for a construction based on the square. Most telling in this respect is the two-storeyed pavilion of the famous big bronze bell at Ta-chung ssü, north of Peking (Plate 28 A). The lower storey is here a square hall with four pillars on each side, the upper one a round tower with a conical roof. The pillars and beams of this storey form, however, a twelve-sided figure, and over this are spanned heavy beams in two layers, forming squares with cut-off corners. They serve as the main support for the roof, carrying by means of short struts the purlins and principal rafters (Plate 29 A, B). These are joined at the top by a big cone. There are no curving parts in the structural frame of the tower or its roof; their roundness is simply an exterior application. Characteristic of its kind is also the wooden staircase which leads in two straight flights up to the balcony of the upper storey, from where the enormous beams of the big bell may be appreciated. It is narrow and steep, almost like a ladder, but such are practically all the staircases which serve as means of communication between the different floors in the wooden buildings in China.

The constructional traditions pointed out above were, indeed, not apt to further the development of buildings on a circular plan. Such buildings have however been

ROUND PAVILIONS

erected from time to time in China, particularly smaller open pavilions, but also larger ones for special practical or ceremonial purposes. Among the latter may be remembered the round building at the Altar of Agriculture in which the sacred grains were preserved (Plate 28 B), and the two well-known round temples at the Altar of Heaven. The smaller one of these, known as Huang-ch'üung yu, in which the spirit tablets of Heaven and the deceased emperors were conserved, is a one-storeyed building situated on a balustraded marble terrace, to which three flights of steps lead up (Plate 30 A, B). The carrying framework consists of double rows of eight pillars, the exterior ones being joined together by curving beams, while the interior pillars are tied by straight beams which serve to support the big conical roof. This is covered by deep blue glazed tiles, and crowned by a gilt cone; it appears like a huge blue parasol over the red building, the front part of which is opened by latticed windows and doors. At the back the pillars are encased in the brick wall; the architectural effect from this side is simpler but by no means less harmonious or impressive, particularly as the curving lines of the building are supported by those of the enclosing wall which follows a wider circle.

The other temple at the Altar of Heaven, known as Ch'i-nien tien, the hall where the emperor offered prayers for a prosperous year, is a much larger and higher building erected on a marble terrace in three storeys and provided with a triple roof. Eight flights of steps lead up to the terraces which have a wide range—the lowest one measuring 76 m. and the uppermost 66 m. in diameter—and thus serve both by their extension and their white colour to counterbalance and emphasize (by contrast) the great building which is red with deep blue roofs (Plate 31 A).

Three successive rows of round pillars act as a supporting frame; the pillars in the outermost row, which support the lowest roof, serve at the same time as buttresses for the twelve pillars of the next range, which are much higher and tied together in groups of four by means of thick horizontal beams. Inside of these stand four enormous pillars which reach up to the eaves of the uppermost roof. They are tied with the pillars of the middle range at the points where the horizontal beams intersect and joined between themselves by a series of curving beams. On these stand, furthermore, smaller vertical supports for the main roof, the whole construction being carried out in a very bold fashion on a huge scale. All the pillars are covered with red lacquer and the four middle ones are abundantly decorated with leaf and flower patterns in gold relief (Plate 31 B). The beams and brackets are painted with ornamental designs in blue, green, white and gold on the red ground; the colour effect is truly gorgeous; it is almost saved from being crude by the diffuse light in the upper part of the high building.

Buildings such as the Huang-ch'üung yu and the Ch'i-nien tien are, indeed, great exceptions carried out for special purpose on Imperial command. They were both built at the beginning of the Ch'ing dynasty, and we know of no earlier or later wooden constructions which could compare with them in architectural importance. The great majority of such buildings still existing in China are, as already stated, pavilions or *t'ing tzü* erected for decorative rather than for practical purposes.

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Among them may be quoted several examples built on a round plan, though those on a polygonal or square plan are more common. When built in two storeys, the lower roof may be square and the upper one polygonal or round. This type is well illustrated by one of the Five Dragon pavilions (Wu-lung t'ing) at the northern end of Pei hai (Plate 32). The varieties of the pavilion are too numerous to be described here in detail but, generally speaking, they are characterized by a certain airy lightness, an endeavour to make the expansive tent roof hover in the air over the open framework, an impression which becomes most suggestive when the pavilion rises over quivering reflections in the water. As important examples may, furthermore, be mentioned the four pavilions on Mei shan (Coal Hill) in Peking. The middle one is on a rectangular plan with a broad colonnade all around. By its shape, dimensions and dominating position it almost becomes a centralized hall. Of the smaller side pavilions, two are hexagonal and one round, the latter entirely open, without walls but with double rows of pillars supporting the two-stepped roof (Plate 33 A, B). Architecturally all these pavilions are, however, only minor examples of the principles already described, but their decorative effect is a different one; they give us a more intimate idea of the naturalness of Chinese architecture than most of the big halls, particularly when they are set among old trees or clinging to the rockeries of the gardens. Their picturesque beauty served also better than anything else to make Chinese architecture popular among European architects of the 18th century.

When buildings of this kind are erected on a larger scale and the space between the successive roofs is developed into actual storeys with balconies or colonnades, there arise polygonal towers which may be called pagodas rather than pavilions. One of the best known examples of such pagoda-pavilions is the Fo-hsiang-ko (Buddha's Fragrance tower) at Wan-shou shan near Peking (Plate 34). It was newly erected in the time of Empress Tzū Hsi, but in accordance with ancient principles and in a form which suggests the early polygonal pagodas of China. Unfortunately most of these wooden pagodas have now perished, but at least one important example may be mentioned: the octagonal pagoda of Fo-kung ssü at Ying-chou fu in northern Shansi (Plate 35). It was erected in 1056, during the reign of the Liao dynasty, and is considered to be the earliest wooden building preserved in China. The tower is built on an octagonal plan in five storeys, of which the lowest one has a doubled roof, and reaches a height of nearly 60 metres. Each side of the octagon has four supporting columns, and over these are laid beams and tripled rows of brackets which carry the successive roofs.

Such wooden pagodas must have formerly existed in great numbers, but the materials have not withstood the ravages of time, fire and warfare. We know the type nowadays mainly through pagodas which have been preserved in Japan, and from the reproductions in brick still existing in China. As the construction here is modified by the material, these brick pagodas will be described in connection with other brick buildings; yet, in order to realize the close connection between the wooden and the brick pagodas, it may be well to recall that there are structures of

P'AI-LOU

this type in which both materials have been used. Best known among these are some of the Su-chou pagodas, for instance, Jui-kuang ssü and Pei ssü ta t'a (the so-called "Big pagoda"), both foundations of the 10th century, but rebuilt in modern times in accordance with the original style (Plate 36 A). They are octagonal towers with a body of brickwork, but roofs, brackets, and balustrades of wood, which give them a lighter appearance and a greater likeness to wooden structures than is found in the ordinary brick pagodas. Heavier in proportions though also partly (i.e. in the upper storeys) furnished with wooden brackets and beams, is the so-called Mu t'a in Cheng-ting fu, which has derived its name from the use of the wooden material (Plate 36 B). It is said to be a foundation of the T'ang dynasty, but its present form is rather in accordance with the style of the Sung period and it has furthermore been subjected to extensive repairs during the Ming period, in the years 1447 and 1552.

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P'AI-LOU, BALUSTRADES AND DOORWAYS

Beside the various types of wooden buildings which we have been considering, a few purely decorative structures may be mentioned here, as they form particularly characteristic features of Chinese architecture. Some of them, like the shop-fronts, doorways and balustrades, are integral parts of the buildings; others, like the p'ai lou and memorial pillars, are independent, free-standing monuments. Most interesting among these are the p'ai lou, or gateways of honour, which are found in great numbers all over the country; some made of wood, others of stone, the latter being evidently derivations from the former. Generally speaking, they are memorials or monuments of honour, erected at the entrances to tombs, temples, and official buildings or across important streets. Some of these p'ai lou are erected simply to distinguish places famous for their sacred character or historical associations, but most of them are intended as a posthumous honour or memorial to persons who had distinguished themselves by virtue or learning, and it was, as a rule, the emperor or the provincial governor who caused the p'ai lou to be erected. It was quite common to erect a p'ai lou in memory of a faithful wife who had voluntarily followed her husband into death and also to scholars who had passed the highest examinations with special honours. The name of these gates of honour is derived from the inscribed boards fastened at the crossbeams of the middle gate; it has been translated: "storeyed edifices with an inscribed board."¹

These p'ai lou must have been erected since very early times, and they were

¹ Cf. J. J. De Groot, *The Religious System of China*, Vol. II, p. 784. "The honorary gates display a horizontal tablet firmly inserted in the pillars and cross pieces, and upon it a few big characters are carved, signifying the qualities or virtues for which the monument was raised, or some poetical allusion thereto. It is on account of this board that the gates are generally styled *p'ai lou*: storied edifices with an inscribed board; or *p'ai fang*: honorary gates with an inscribed board. Over this inscription a

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probably in origin simply wooden gates on which tablets with honorific inscriptions were fastened. By adding to their posts and entrances the gates were further developed ; most of those which still remain have three, but there exist also larger ones with five openings. From an architectural point of view they may be divided into two groups, the one comprising gates with side posts continuing through the roofs (Cf. Plate 37 A, B), the other gates the side posts of which do not pass through, but are covered by the roofs which rest on the transverse beams (Plate 38 A, B). In both cases there are rows of brackets under the eaves, but it is in the nature of things that the p'ai lou which are provided with covering roofs are more akin to pavilions and similar buildings than those at which the projecting masts and crossbeams produce the appearance of regular gateways. When these p'ai lou are built of wood, the supporting side masts are usually buttressed by strong struts, and, as a rule, there are in addition stone plinths into which the masts are steeped. If the gateways are made of stone, the long buttresses are often replaced by lower sculptured side supports reminding of inverted consoles. The decoration is concentrated on the upper parts, the crossbeams and the tablets between them, and on the roofs which are laid in two or three storeys, depending on whether the gate has three or five openings. On wooden p'ai lou these decorative parts are usually carved and brightly painted in blue, green, white and gold, while the posts are red ; on stone p'ai lou the ornaments may be in relief or in open work. A very common addition, particularly on the stone p'ai lou, are the small lions, which are seated either at the sides of the middle gate or at the top of the high posts. At the Imperial gateways, erected in white marble, the posts are usually provided with a kind of wing-like projections (with cloud patterns) at the top, a motive well known from the so-called "hua piao" pillars which stand at the entrances to the Imperial palaces. These "flowery signposts" have been variously interpreted, but they are, indeed, in one way or other connected with Imperial virtue and glory, as also is proved by the dragons which wind around the shafts of the pillars as if they were descending from the clouds (Plate 40 B). The great marble p'ai lou at the Imperial tombs and sanctuaries appear thus in many cases like two "hua piao" connected by crossbeams and, even if they had no dragons winding around the shafts, they may rather be called "signposts of glory and virtue" than memorial or honorific gateways. They are used most abundantly at all the open-air altars in Peking, and also at the Western and Eastern Tombs (Plate 39 B). Their decorative effect is very fine, particularly when they are standing two or three in a row behind each other, but from an architectural point of view they are less interesting than the other p'ai lou ; they have no roofs, no brackets, no ornamental tablets, and only one thoroughfare.

second tablet, placed perpendicularly under the highest roof, displays the characters signifying 'By Imperial Decree,' or 'By Decree of the Holy One.' On gates erected for literary graduates it generally bears the characters 'Glory conferred by (Imperial) favour.' A third tablet, inserted horizontally over the dragon-carved lintel of the central thoroughfare, displays the names and titles of the person for whom the monument was erected and, in many cases, those of his sons and grandsons who built it for him. In the case of a woman, the names and titles of her husband are carved upon it as well as her own."

G A T E W A Y S

The most imposing p'ai lou are those made of wood with large overhanging roofs. We have seen them beautifully developed, for instance, at Si-an fu, where they are found at the entrances to Buddhist temples, Mohammedan mosques, and Government offices. Their immense roofs spread tent-like over the masts and the sculptured crossbeams, supported by no less than sixfold tiers of closely-placed brackets. They are no longer gates in the ordinary sense, but buildings which remind us of long façades or pavilions, from which the corner-posts have been removed. The same type of p'ai lou may also be executed in stone, as can be seen at several gateways which span the main street in Wei hsien in Shantung (Plate 40 A). Here not only the posts and crossbeams but also the roofs and brackets are executed in stone in direct imitation of wooden structures. No better proof could be found for the fact that the p'ai lou originally were wooden buildings which, however, when this material was not available, also were made of stone.

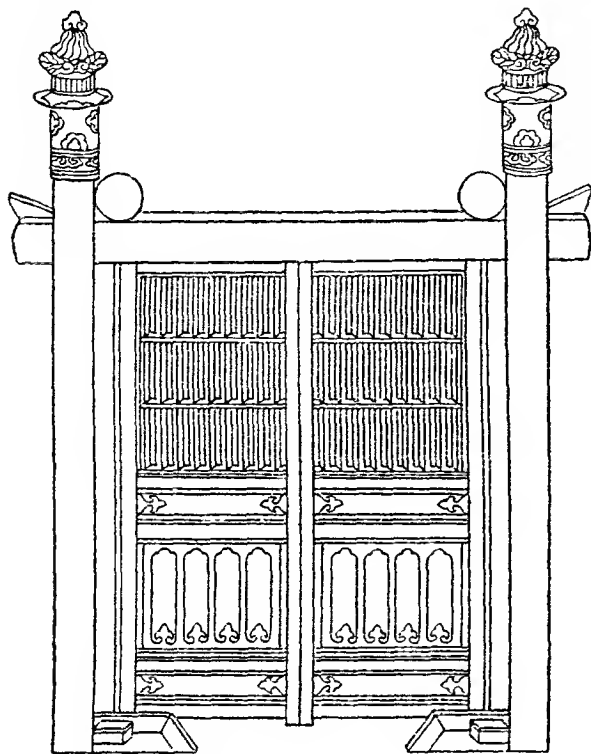
Closely related to the p'ai lou are the ornamental shop-fronts or gateways which used to be one of the most attractive features of the business streets in important cities. They have more and more given place to the commonest looking brick and cement buildings, and appear nowadays as exceptions in Peking, for instance. They include several variations in type and ornament, but one of the commonest is the façade, with two or three high masts tied by a series of ornamented crossbeams, over which small saddle-roofs are spreading their wings (Plate 41 A). The beams may be developed in the form of sculptured friezes in relief (often consisting of a series of square panels) or in open-work, and as these parts always are gilt or heightened with colour, their decorative effect is most striking. Another type of these shop façades has no tall masts but a high balustrade in open-work above the roof line, but in both cases there are beams ending in dragon heads, projecting far out from the eaves, and from these are hung the various decorative signs which indicate the goods offered for sale in the shop (Plate 41 B). Special signboards with large characters in gold on black ground are, furthermore, fastened under the eaves, and below these follow the richly-sculptured lambrequins as a kind of drapery over the doorways.

The development of these decorative façades is different in the various provinces, the southern types being generally more profusely sculptured than the northern, which are more sober and structural. Occasionally such sculptured friezes and lambrequins may also be found at the entrances to yamens and temples, particularly in the province of Shansi, where the art of wood-carving always seems to have been in great favour. A fine example in this respect is the outer gateway of the Shang-hua-yin ssü in Ta-t'ung fu (Plate 42 B), where the supporting pillars and their crossbeams are joined by a kind of large draperies carved with flowery patterns in open-work, which take the place of the large consoles generally projecting from the pillars under the beams. The front gallery of the gateway pavilion has thus been subject to a decorative treatment which distinguishes it from the buildings behind ; more commonly, however, the ornamentation is concentrated on the beams and brackets of the gallery, and executed in colour. At the huge palace gates of the Forbidden City

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this colourful decoration is very profuse and also spread over the coffered ceiling, as may be seen in our plate of T'ai-ho mên (Plate 42 A).

These entrance halls or gateway pavilions, erected at some distance from the main buildings of the compound, are most significant in reference to Chinese architecture on the whole. They form, so to say, the overture to the main composition with its courtyards, gardens, halls, galleries, and pavilions, and play in this respect the same rôle as the vestibules and big staircases of European palaces. They emphasize the fundamental tendency of Chinese architecture to spread out rather than to build



An outer gateway, after Ying Tsao Fa Shih.

up, and also the "interior" character of the courtyard which, particularly in the hot season when it is covered by awnings of straw mats, is just as much of a dwelling-place for the inhabitants as the rooms. Architecturally the gate pavilion is of the same type as most of the other buildings, i.e. a rectangular hall with saddle-roof, but it has an open front, sometimes with double rows of columns, and one or three large doors at the back wall. An excellent example of such buildings is the gatehouse at Li-wang fu, which is claimed to be of the Ming dynasty (Plate 43 A, B). In any case it is a remarkably well-preserved, old-fashioned building, where the treatment of the unpainted wooden columns, beams, wall-panelling and roof construction may be clearly observed. The construction is rather simple (without the use of brackets) but extremely solid; all the structural

members are strong, not to say heavy, and joined together with admirable carpentry.

At smaller residential compounds the gatehouse is of course a less important building; it has no outer gallery, but simply a couple of columns which support the projecting roof over the big doorway. Inside the door is usually some space, a kind of open waiting-room at the side of the gatekeeper's quarters, and from here one passes through a second minor gate—often situated in angle to the main gate—before one reaches the front pavilion of the compound. The road from the main gate to the first pavilion hardly ever leads in a straight line; one has to pass around the "spirit wall," a short screen erected behind the first or second gate (depending on the space available), and intended to protect the compound from evil spirits, which are said never to proceed in a straight line. As those spirit walls usually are ornamented with reliefs in baked clay, which at important buildings may be glazed and multi-

BALUSTRADES

coloured, they form important features in the decorative *ensemble* of the courtyard. The best known large specimen of such spirit walls is the so-called "Nine dragon wall" in Pei hai, which belonged to a temple now destroyed. It is coated with green, yellow, blue and aubergine bricks and makes both by its colours and its spirited decorative design a most striking decorative effect. The ordinary spirit walls are, of course, much smaller and simpler, but, nevertheless, quite impressive, particularly as they obstruct the way most unexpectedly.

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In connection with the gates and the p'ai lou may also be mentioned the balustrades which are, as a rule, of great importance for the decorative effect of the Chinese architectural compositions, and which probably more than any other element of Chinese architecture has appealed to Western artists. Generally speaking, the balustrades function as the tendrils by which the Chinese buildings cling to the landscape or to their terraces ; they form not only an outward frame but also a dividing element and serve to emphasize the picturesqueness of these architectural compositions. From a material point of view, the balustrades may be divided into two general groups, viz. balustrades of stone and balustrades (and lambrequins) of wood. An intermediate position between these two groups is held by balustrades made of brick which are less monumental than those of stone, but not as airy and elegant as those of wood.

The stone balustrades which have been in use in China at least since the Han period, and possibly earlier, are composed of heavy square posts with high, sculptured finials, between which are inserted ornamented slabs. The lower part thus usually takes the form of a continuous decorative panel divided in sections, whereas the upper part is formed by a railing, which is supported by urns, corbels, or other kinds of richly moulded short colonnettes. This type of balustrade may be seen already on paintings of the Sung period, such as a scroll, attributed to Li Kung-lin in the Freer Gallery, where it is used in exactly the same way as in innumerable later gardens and palaces, i.e. to line the terraces on which the halls and pavilions are erected. This very common kind of stone balustrades, which at important buildings are made of white marble, includes a number of variations, but these consist less in any compositional features than in the decorative treatment of the panels, corbels, and finials. At the Imperial temples and palaces those various parts of the balustrades are indeed developed to a very sumptuous effect, the corbels supporting the railing being sculptured with a kind of cloud pattern, and the finials decorated with dragons and phoenix-birds amidst whirling clouds (Plate 44 A). An important feature of these balustrades are furthermore the dragon-heads which project from the cornice of the terraces at the foot of each post. Owing to their carefully calculated mouldings and the broad ornamental friezes dividing these, the terrace façades receive an architectural importance of their own (Plate 44 B). Crowned by the high and richly sculptured balustrades, they appear practically as a continuous ground storey over which the airy pavilions lift their golden roofs against the blue sky.

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The colouristic contrast is here of paramount importance, and the many-folded grooves and projections add greatly to the play of light and shade over the terrace façades.

At other buildings from the 16th to 18th centuries the stone balustrades may be of a somewhat simpler kind ; the panels are heavier, more compact and less ornamented, the openings under the railings quite small, but the dividing vertical posts are always very prominent, particularly by their high sculptured finials which, indeed, are the most characteristic feature of the Chinese balustrades. Generally they are round and ending in cone, bud, or flower shapes, but there are also finials in the shape of human figures and lions, the latter being quite common at the stone bridges and paved roads which lead up to many temples. Several such balustrades will be illustrated in our chapter about the bridges, but here may be recalled two particularly fine specimens of lion-crowned balustrades : one at a bridge close to Wu-ying tien in the Forbidden City, another at the road which leads up to the Kuan-ti miao near Honan-fu (Plate 45 A, B).

A very beautiful decorative effect is obtained when these sculptured balustrades are rising, so to say, out of the water—the shallow green water, with plenty of lotus flowers—as may be seen, for instance, at Chung hai in Peking or at the Summer Palace, where they extend for miles and become redoubled by the reflections in the water. Here they are as a rule combined with the light wooden railings of the open verandas and galleries, which form like chains of square ornamental links between the heavy, round pillars at their top as well as at their base (Plate 46 A).

These wooden balustrades, too, are divided in equal sections, where the same ornament is repeated almost *ad infinitum*. It shows a number of variations, but consists generally of a combination of rectangles, the smaller ones framing the larger ones, while two groups of small rectangles placed crosswise subdivide the panel into equal sections. Other combinations are produced by the introduction of a kind of meander motive or by the insertion of minor rounded designs (Plate 46 B). This kind of rectilinear lattice-work is essentially the same as that which fills the panels of innumerable windows and doors of the Chinese pavilions. When developed to its fullest perfection, this ornamentation takes on the appearance of a kind of labyrinthical pattern, which, so to say, is generated by a central motive of variously divided rectangles (Plate 47 A, B). The decorative effect depends mainly on the rhythmic repetition of rectangular spaces crosswise and lengthwise, symmetrically arranged and quite regular, though intricate enough not to appear monotonous.

These lattice-work ornaments set against the white rice-paper of the doors and windows form, indeed, one of the most striking decorative features of the minor residential buildings and pavilions in China. They accentuate the air of picturesque elegance and brittleness so characteristic of these structures, though at the same time by their symmetrical arrangement subject to the structural framework. The lower portions of the doors are, however, as a rule filled out with panels which may or may not be ornamented. Occasionally a decorative lambrequin, carved in open work, is added at the top of the door, as may be seen on a pavilion of the Shang-

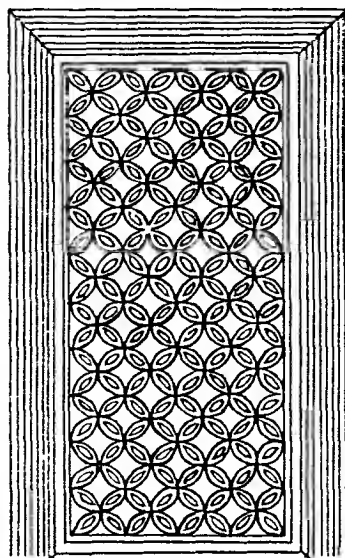
DOORS AND WINDOWS

hua-yin ssü in Ta-t'ung fu, but more commonly this place is taken by a standing tablet on which the name of the building is inscribed in large characters (Plate 48 A).

On larger palatial buildings of the Ming and Ch'ing dynasties the doors have four leaves (battants) enclosed in strong frames fitted with bronze ornaments. The panels of the lower portions are ornamented with a kind of palmette in gold outline on the red ground, and the upper portions filled with lattice-work, which may consist of intersecting diagonals or of a star pattern combined with small circles (Plate 48 B). On T'ai-ho tien, and some of the other ceremonial halls in the Forbidden City, the usual palmette ornaments are substituted by large oval cartouches filled with winding dragons in high relief, a very pompous and effective motive, particularly as the reliefs are heightened with gold (Plate 49). Such doors have probably been in use in China ever since the T'ang or Sung dynasties, though the style of the dragons was modified according to the periods. The pattern of the lattice-work is the same as appears in the illustrations of *Ying Tsao Fa Shih*, the architectural treatise of the Sung dynasty.

A full description of the doors would also require some special observations on those thick wooden double panels, armed with rows of large bronze knobs, which are used to close the city gates and the palace compounds in northern China. Excellent examples of such doors may be observed on our plates not only of Ch'ien mên, but also of other gates and of the entrance hall at Li Wang fu in Peking, which, as stated above, may be of the Ming period (Plate 43 B). These doors impress us by their enormous size and primitive construction as they swing round on pivots in stone sockets. Their decorative character is quite severe, depending mainly on the bronze fittings on the red-lacquered wood, to which sometimes are added large lion masks with rings in their jaws to serve as handles. Like so many other elements of Chinese architecture, they perpetuate very early traditions and remind us of the doors in mediæval palaces in Europe.

Quite peculiar to the Chinese buildings is also the treatment of brickwork when used in balustrades. The bricks are then laid so as to form regular patterns of open squares in successive rows, the squares being alternately open and closed. The play of light and shade which is thus produced sometimes almost suggests an effect of basket-work, as the bricks are longer than the openings. Such brick balustrades are used with great advantage, for instance, along broad stairways or around garden terraces, but their ornamental designs give scope to variations. On



Door panel according to
Ying Tsao Fa Shih.

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the brick walls the patterns produced by open-work may be of a different kind, as, for instance, squares or crosses, combined into larger decorative designs around the gates and windows. A characteristic example of this may be seen in the brick wall from the garden of the Confucius temple at Ts'in-ning chou, Shantung, where the opening is in the form of a large circle, whereas the ornamental patterns on both sides show a combination of crosses (Plate 50 A).

The doors and the windows show an almost infinite series of fanciful shapes which sometimes appear so unexpected that one might almost be tempted to call them accidental, though on closer examination one will find that they are distinctly calculated with a view to a picturesque effect adapted to the surroundings. These openings, which may show all kinds of combinations of circular segments or of urn-, leaf-, or fruit-shaped forms, reveal an entirely different attitude towards architecture than the one prevailing in Europe (Plate 50 B, 51 A, B, C). In many cases they are entirely non-tectonic and composed from a pictorial point of view, the building being treated not as a structural composition but as an integral part of a beautiful garden landscape. The setting of the buildings is, indeed, here of the greatest importance. The rockeries, the ponds, and the winding stems and branches of the trees frame and support these buildings, which often seem to hide rather than to assert themselves. They have been produced by people with a very intimate feeling for the beauty of living nature, builders who were less architects, in the ordinary sense of the word, than painters and decorators, even when they built their houses. The most effective elements of their architectural compositions, such as the curving roofs, the brightly-painted brackets and pillars, the ornamental balustrades, the lattice-work windows and doors, are often quite foreign to what we are used to call architecture, and contribute to the artistic effect of the building independently of any tectonic importance.

BUILDINGS IN MUD, BRICK AND STONE

Our survey of the most characteristic wooden buildings in China has, no doubt, conveyed an idea of the essential uniformity of the traditional constructions and their richly variegated decorative elements. All these buildings were pillared halls or pavilions and their variations consisted more in the picturesque combinations of the traditional elements than in any distinctive tectonic features.

Besides the wooden buildings the Chinese have, however, also executed constructions in stone and brick, though these never reached the same popularity or artistic importance as the buildings in wood. The reasons for this may, indeed, have been of a practical rather than an artistic kind. The houses of the Chinese, just as well as those of the Japanese, were in olden times reckoned to last only for the lifetime of a man; the Imperial residences were changed by the successive rulers, and so on. When constructing for living men one never had the ambition of building something for eternity; the home was not a castle but a temporary abode, whereas the tomb was made to last for longer periods.

Thus it became natural to the Chinese not to employ the most permanent materials and methods of construction in their ordinary dwellings, but to reserve these for the important tombs and for some sacred buildings, such as pagodas, and for purely utilitarian structures and defensive works, such as walls, terraces, bridges, and the like.¹

If we wish to know something about the faculty of the old Chinese to handle stone construction, we would have to make investigations rather below than above the soil, dig out the tunnels leading into the sepulchral chambers, and study the foundations of some of the defensive works, tasks which, however, require archæological excavations of a more extensive and systematic kind than as yet have been accomplished in China.

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Brick and stone architecture in China is seldom of a pure kind comparable to the art of building in similar materials in the West; the masonry and the stonework

¹ It is a remarkable fact that stone buildings are not specially mentioned in the standard work, *The Method of Architecture* (*Ying Tsao Fa Shih*), which was first published by Imperial command in the year 1103, and which was recently republished. This well-illustrated work in eight volumes seems to be the only one of its kind in China, and its special interest is due to the fact that it is based on practical experience and professional traditions which the author, a man named Li Chieh, collected from builders and decorators. The essential contents of this book have been explained in French by P. Demiéville in the *Bulletin de l'École Française d'Extrême-Orient*, Tome XXV (1925), N. 12, and in English by Dr. W. P. Yetts in the *Burlington Magazine*, March 1927. It gives us an insight into the building methods of those days and into the decorative motives in common use; in short, it tells us what an educated Chinaman at the end of the Sung period considered to be the *elements* of architecture. In this work no constructions in stone and brick are mentioned, not even columns, door-frames, or floors of stone, though the latter have certainly been used in all times. The only stone works particularly

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is usually only a coating on a body which is made of mud or clay. It should be remembered that the soil of northern China (the well-known loess) offers an excellent building material when mixed with water and possibly some straw for binding, and in a treeless country where other material and fuel for burning bricks is hard to obtain, this has been used most abundantly for all kinds of buildings. We have already had occasion to point out this in our discussion of the walls and terraces which originally were made simply of mud and gravel, well packed into layers which under the influence of the exceedingly dry climate harden into an almost stone-like substance. Excellent examples of such walls may still be seen in the north, for instance, at Tokoto in northern Shansi, now called Suiyuan, where the city wall of loess-cement reaches a height of more than 20 metres (Plate 52 A).

The simplest dwellings in loess are, no doubt, the caves hollowed out in the mountain sides along the natural terraces, which afford quite comfortable habitations, particularly during the hot season. Sometimes walls are added in front of the cave or a whole structure, which may be of wood, as we know from so many of the cave-temples in northern China; the cave then becomes the innermost sanctuary of the whole composition. In other instances the mountain slope serves as the back wall of the buildings, which may be erected of loess-cement or of sun-dried bricks. On the plains the loess buildings are free-standing, low, square huts with flat or slightly sloping roofs, strengthened by straw or wood, as the case might be. But there are also examples of buildings in the shape of tunnels or big tubes with flattened bottom, the main part of them being a barrel vault of packed loess (Plate 52 B).

This primitive kind of loess architecture reminds us quite closely, particularly when carried out in square shapes with flat roofs, of the "dauby" architecture used by the Indians in New Mexico and Arizona (Plate 52 C). The material is similar and it has naturally led to corresponding forms, though it may be admitted that the Chinese never developed their mud buildings into such monumental shapes as may be found among the dauby structures of the Indians.

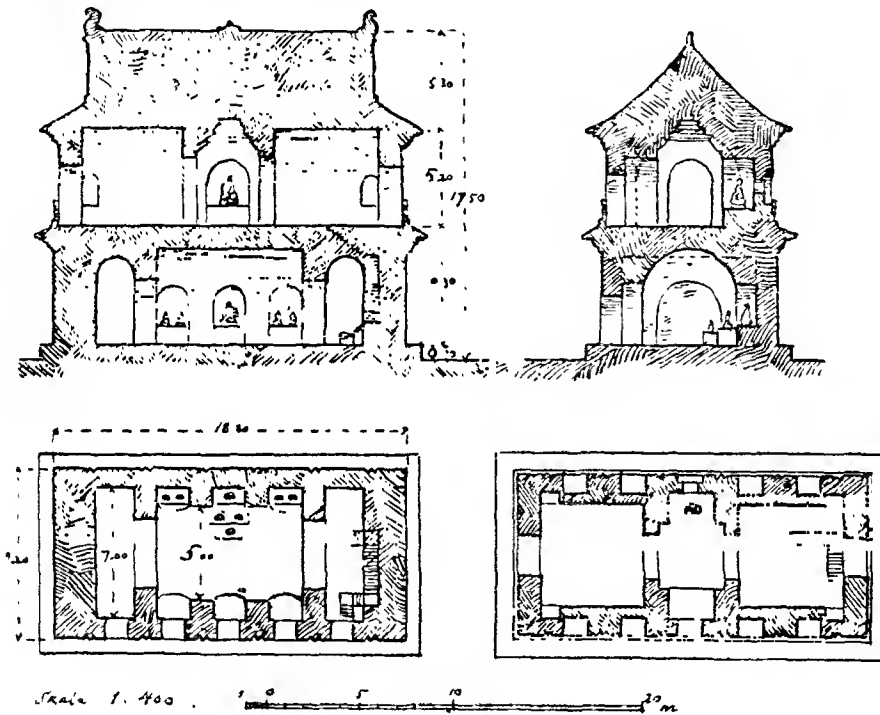
A step further in the development is illustrated by the buildings of northern Shansi, which are made of slightly baked bricks and provided with vaulted entrances, though placed against the mountain sides (Plate 53 A). They often take the shape

described are the plinths of the columns, cornerstones on the columns, corner pilasters, steps, balustrades, dragons' heads on stairs, thresholds, stones for doorposts, besides some utility structures such as canals, locks, platforms, terraces, etc. The measurements and instructions for such works are given with great precision, but they have not a great bearing on the architectural style. Constructional methods are only treated in the third part, which includes "Rules for large works in wood," or, in other words, carpenters' rules concerning columns, beams, roof and floor. The following chapter contains "Rules for small works in wood," i.e. doors, windows, partition-walls, screens, cornices, gutters, stairs, door-panels, ceiling-coffers, balustrades, as well as certain special objects, such as Buddhist or Taoist domestic shrines and so-called *fa yüeh*, a kind of decorative sham façades, erected in front of the houses of important citizens. There then follows "Rules for works in carved wood," concerning decorative details, and at the end of the book "Rules for exterior roofing," ornamental figures on the roof, etc. And although there is reference to other tiles than the curved tiles used in roofs, yet there is no account of buildings in brick.

BUILDINGS IN LOESS

of long galleries with flat or slightly sloping roofs, sometimes decorated with ornamental balustrades over the eaves. By their shape and general composition they retain some of the traditions of the primitive mud buildings, but the brickwork is well developed and sometimes embellished with quite effective ornamental details. A peculiarity worth noticing, which also proves the well-advanced stage of this architecture, is the use of hollow bricks in the shape of short pipes for terrace and boundary walls, which thus are drained of excessive moisture (Plate 53 B).

The ordinary brick houses of northern China show, on the whole, very few elements of architectural interest. Their plain walls have no divisions, except by the doorways,



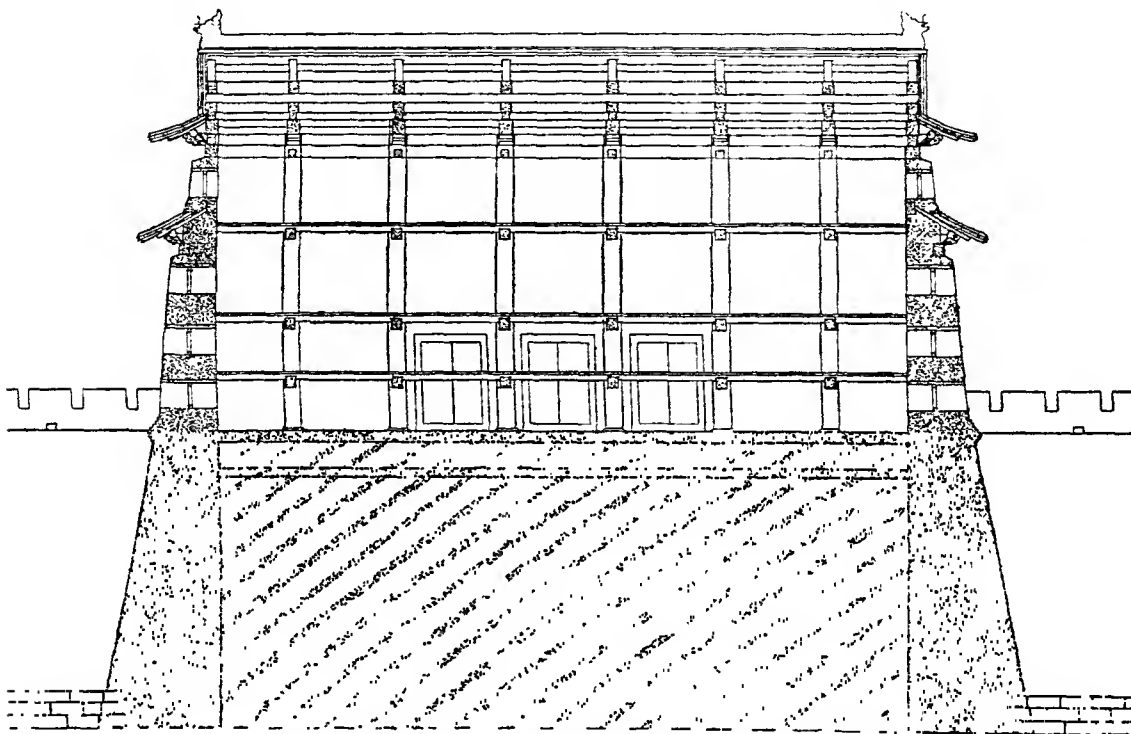
Wu-liang tien in Su-chou, Kiangsu. Drawings by H. Moeller after illustrations in Boerschmann, *Chinesische Architektur*.

which may be arched or enclosed between two broad pillars, covered by a lean-to roof. If windows appear on the outside, they are quite small, often round, and placed high up on the wall. The roads which pass through many of the small towns and villages of northern China are lined with such houses, which, indeed, seem to be built with the idea of offering the least possible access to strangers and robbers. The roofs may be flat and crowned with balustrades, sloping towards one side, as often in Shansi, or saddle-shaped, but they are, as a rule, laid on wooden beams and rafters. Vaulted brick roofs are very seldom found in other buildings than important temple halls from the latter part of the Ming period.

The most prominent examples of such temples are Shuang-t'a ssü (the two-pagoda

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temple) at T'ai-yuan fu (Plates 54 A, B, 55 A) and Wu-liang tien in Su-chou fu (Plate 55 B). They are both essentially brick constructions in two storeys, except for the outer roofs which are built in traditional Chinese fashion, with curving slopes. The main hall of Shuang-t'a ssü is covered by a large barrel vault supported by three arches along both sides, which on the façade correspond to the doorways. The two ends of the building are cut off into separate rooms by cross walls, which likewise have arched openings. The construction is thus carried out in the regular Western fashion, and the arches are almost circular segments. The somewhat foreign appearance of these buildings is still more accentuated at their façades,



Longitudinal section of the outer tower of Ping-tzu men, Peking.

which have brick columns on moulded pedestals between the arches. These columns are, however, partly sunk into the body of the wall, and instead of capitals there are a kind of ornamental brackets supporting an architrave over which the three folded brackets project like a cornice. But all this is made of brick, only the rafters of the projecting roofs are of wood.

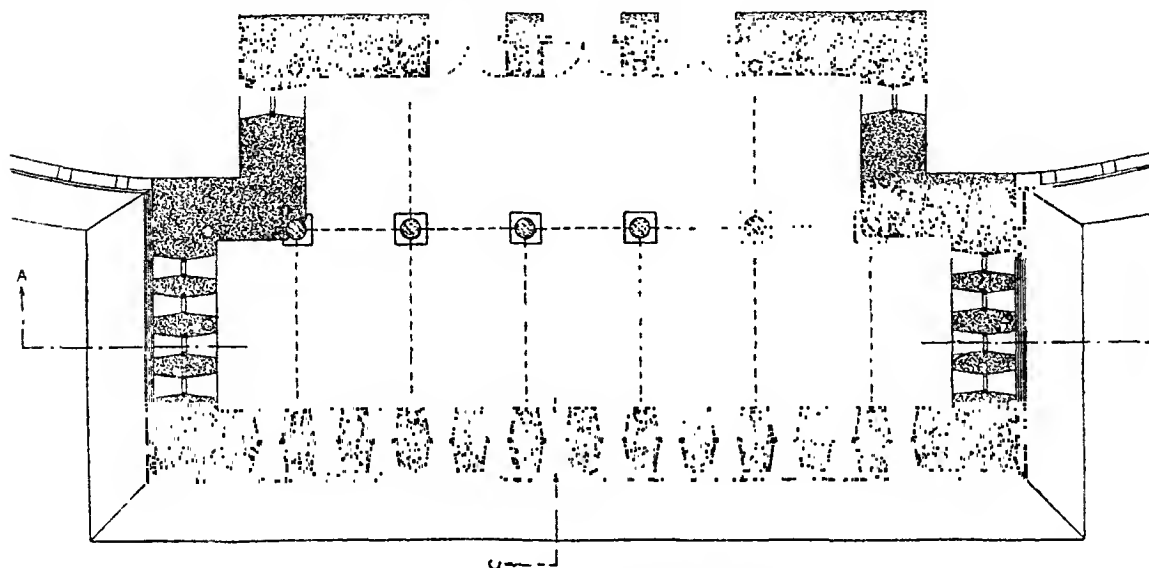
From such barrel-vaulted rooms the step is not very far to the construction of brick cupolas. An important example of how this was accomplished is offered by the hall of the great bronze elephant on O-mei-shan in Szechuan, which also is a building of the Wan Li period (1573-1619). Here the square room is merged by means of pendentives into the hemi-spherical cupola, which, however, is covered by the usual Chinese wooden roof.¹ Cupolas may well have been constructed in China also in

¹ Cf. Boerschmann, *Chinesische Architektur*, Plates 49-50.

FORTIFICATIONS

earlier periods ; we find them, for instance, over the inner rooms of the Moham-medan mosques at Hang-chou in Chekiang and Ting-chou in Chihli, which are claimed to be buildings of the T'ang dynasty, though surely reconstructed later. These are comparatively small square rooms, comparable in size to mortuary-chapels and tomb-chambers, which sometimes, no doubt, were covered with cupolas made of brick. When more of the early tombs become known, we will probably learn more about the ability of the Chinese in regard to this kind of constructions.

When the Chinese resorted to brick construction it was, of course, generally for the purpose of stability or because wood was not available in sufficient quantities. The former reason applies to all the defensive works like walls, city gates, towers, etc. (which often are combinations of brick and wood constructions), the latter particularly



Plan of the outer tower of Ping-tzu men, Peking.

to the pagodas which in earlier periods may have been largely of wood, but gradually became brick and stone structures on which the wooden elements are more or less faithfully reproduced.

The masonry architecture with a defensive scope found its expression not only in the walls, bastions, and towers, which already have been shortly mentioned in the previous chapters ; buildings of a similar nature may also be seen at many country temples (particularly in Shansi), which, in time of trouble, had to take care of their own defence. At both sides of the gate pavilion stand sometimes high square towers with crenellated battlements, which evidently had no other purpose than to serve as vantage points for defenders of the temple (Plate 56 c). Similar defensive towers rise at the entrances to many villages in northern China or sometimes even at the roadside ; they are the classical fortifications in a country where big guns and high explosives were unknown until recent times, and it may well be admitted that they are not only more conspicuous but also more beautiful than any modern fortifications. When erected at the entrances to the villages these brick towers are

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usually pierced by a barrel vault, through which the main road passes ; they become then minor representatives of the same class of structures as is best known to us through the inner towers of the great city gates.

These wonderful gates of Peking and of some other important cities of northern China are practically all composed according to the same plan, and none of them is, in its present shape, earlier than the Ming dynasty. Most of them have been extensively repaired or rebuilt later but the architectural type is of the early part of the Ming period. Their most conspicuous features are the two towers. The outer one is a plain brick building with no divisions or mouldings on the battering walls, except four rows of square loopholes (for the men with bow and arrow) and the eaves of the roofs which usually are two. It stands on a broad, bastion-like substructure which projects from the outer curve of the U-shaped barbican (Plate 58 A, B). The inner tower which is placed on the city wall, here strengthened and broadened into a bastion, has the shape of a large pavilion or hall with two or three successive roofs and open galleries in the two main storeys. Long ramps facilitate the ascent to the terrace of the tower and contribute to lift the superstructure harmoniously above the ground.

At some of the gates both towers are pierced by tunnels, but at the strongest old-fashioned gates the bastion of the outer tower is solid, the entrance being placed at the one side of the barbican, near the main wall, an arrangement which, of course, made the defence of the gate easier. This type of composition may still be seen, for instance, at P'ing-tzū mên in Peking, where the picturesque gateway is completely preserved and overshadowed by a monumental outer tower with no openings except the square loopholes high up (Plate 57). Only the wooden beams and brackets which support the two roofs bear witness to the fact that the construction is not all through of masonry, but interiorly of wood ; the outer row of supporting pillars is mostly embedded in the walls, but the inner row may be seen free-standing in the room. On these pillars rest the crossbeams which serve to support the roofs, the construction being thus a brick building encasing a wooden framework which support a wooden roof. The bastion on which the tower stands, like the wall, consists, as already pointed out, of a mud and gravel core covered with six or seven coats of masonry.

The tunnel vaults which pierce these heavy bastions are sometimes quite remarkable architectural features (Plate 59). At the main gate in Peking, Ch'ien mên, the central vault has a span of over 6 metres, and the thickness of the wall at the foot is a little over 30 metres. The barrel vault is, however, not continued through the whole of it ; the middle portion of the opening is made into a square recess, where the enormous doors are fitted with pivots in stone sockets (Plate 60). The gate pavilion on the inner tower of Ch'ien mên is no less than 50 metres wide on the façade and 38 metres high ; it forms not only a monumental crown but also a considerable weight on the wall bastion.

The same combination of bastion-like substructures with crowning towers of brick, or brick and wood, as we have seen at the gates, reoccurs in many of the Drum and

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Bell Towers which occupy a central position in most of the old cities of northern China. In Peking the position of these two towers is no longer a central one, because, as is well known, they stand practically at the same places as in the Yüan period, when the city extended further north. It is possible that the Drum Tower still may be essentially the same as the one existing in the city of Khanbalic, whereas the Bell Tower, which is entirely of brick with the addition of marble balustrades and arches of the same material, must have been newly erected after 1745, when the earlier tower, built by emperor Yung Lo, was destroyed by fire (Plate 61 A). The Bell Tower of the Yüan period was an entirely different structure situated a little further east.

The Drum Tower is more than twice as broad as the Bell Tower and built in a different style. The whole structure makes an old-fashioned impression; the ground storey does not form a regular terrace with a balustrade, but is covered by a lean-to roof, the main storey has an open gallery, where the pillars stand at very long intervals, the roof is remarkably steep and narrow with hardly any curvature (Plate 62). Compared with other buildings of a similar type, as, for instance, the gate towers of the palace city in Peking, this Drum Tower appears somewhat heavy and compressed in its proportions, which also may be taken as an indication of a comparatively early date. It is quite distinct from the great mass of later buildings in Peking, and makes a very strong architectural effect as it rises on an elevation at the end of a long broad street.

The tunnel vaults which pierce the substructures of these towers and of the city gates and similar buildings are not circular segments but slightly pointed, a shape which the Chinese evidently preferred. Their arches on the façades are constructed with several bands or layers of bricks, laid alternatively lengthwise and crosswise, and bound with strong mortar; their carrying power must, indeed, be very great, particularly as the side-pressure is taken up by the solid walls of the bastions. Occasionally one may find some of these brick vaults lined with stone, as on the Bell Tower in Peking, mentioned above, and on the Water Gate in Su-chou, which may serve to illustrate an interesting variation of the city-gate motive (Plate 63). The same kind of combined brick and stone construction may also be observed at many bridges, but these will be discussed in a later paragraph in relation to other constructions in stone.

Most of the brick buildings mentioned in the previous pages are, as we have seen, not pure masonry work, but combinations of wood and brick structure, the latter being pre-eminently used for the terraces and walls. The same method of combining a wooden frame with outer brick walls return in many of the storehouses and watch-towers in Peking and elsewhere; it is, on the whole, a characteristic expression for the inveterate Chinese tradition of supporting the roofs on wooden frames, even if these have to be hidden in the walls. The characteristic roof-shape is, indeed, something which the Chinese builders hardly ever forego; if they do not make it all of wood, they reproduce the wooden brackets in brick, as on those vaulted temples in T'ai-yuan and Su-chou mentioned above. Their pillared façades bespeak of a foreign influence (possibly derived from India), but the Chinese have not hesitated

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to graft on the foreign models native elements of style, which, after all, make even these buildings look more like the old Chinese halls than any Western edifices.

An entirely different architectural type is represented by the brick buildings on Tibetan models, which were erected under the great Manchu emperors, especially Ch'ien Lung. They have to a large extent an almost fortress-like appearance ; their big masses are dominated by straight horizontal and vertical lines and their roofs are flat. This is most natural at the Tibetan towers and façades, erected on the slopes of the Western Hills, near Peking, in order to give the Chinese soldiers an opportunity of practising assaults on such structures and to prepare them for Tibetan campaigns.

Different in purpose but similar in style are the buildings of the Lama monasteries at Jehol, the great summer residence of the Manchu emperors in northern Chihli. One of them is a reproduction of the famous Potala at Lhasa (Plate 64), the other a copy after the main building of Tashilumpo at Chigatse, and they are said to have been erected by order of Emperor Ch'ien Lung. The unbroken plastered brick façades in several storeys remind us more of Western architecture than of the traditional Chinese buildings ; they are almost oppressively monumental at the side of the Chinese pavilions and gate-towers. Their absolute bareness must, indeed, have appeared dreary to the Chinese, who naturally sought to bring in more movement and colour to the drab grey masses ; this they did by adding canopies of brightly glazed tiles over the windows and some elegant small pavilions with curving roofs over the corners of some of the big square forms. But these are hardly sufficient to relieve the severe massivity and bulkiness which characterize all these buildings, and bear witness to a foreign style artificially transplanted by Imperial command on Chinese soil. These buildings were simply erected for the Lama priests, also imported by Ch'ien Lung, who evidently wanted to give the monks their proper setting. All the rest of the buildings at Jehol, the Imperial residences, pleasure-houses, hunting-pavilions, gateways, galleries and the like, are built in traditional Chinese style and picturesquely grouped along the slopes of the formerly wooded hills.

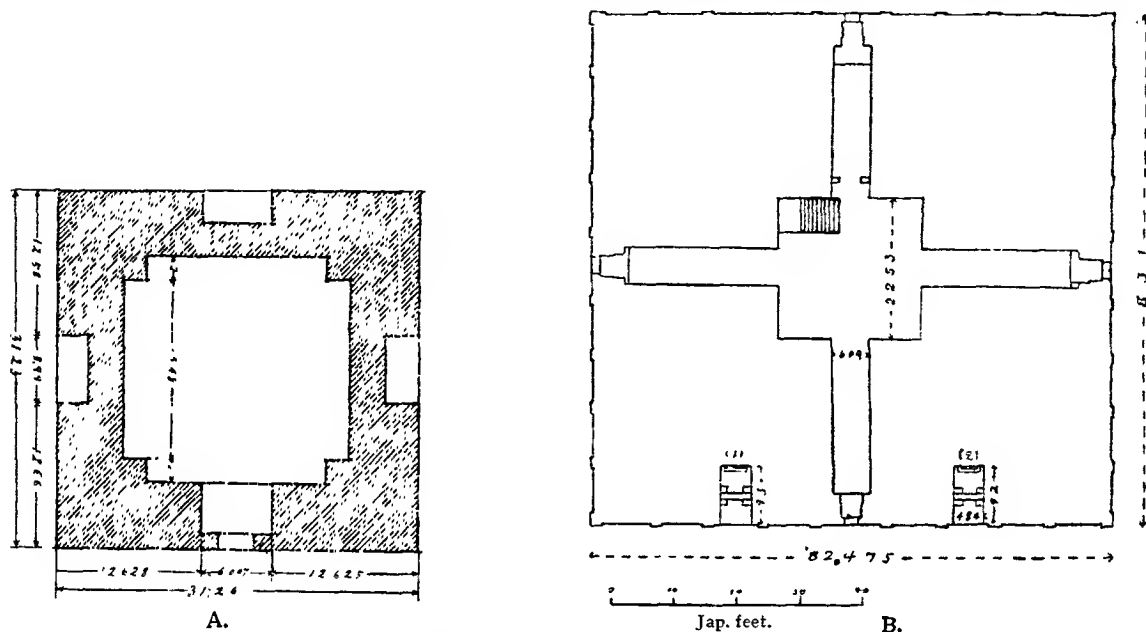
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THE BRICK PAGODAS

In order to obtain a complete idea about masonry architecture in China one would have to pass in review almost every kind of building, because brick and mortar are used more or less in most of them, though often only in a secondary position, to strengthen or to fill out the wooden frame, or as an outer coating on a core of mud and gravel. We have had occasion to notice various examples of both these kinds of structure, but a special type of building remains still to be considered, which, though largely executed in brickwork, seldom is a pure brick structure. We mean the pagodas, of which a great number still may be seen all over China (but particularly in the northern provinces), dating from the 6th to the 18th century. This very important group of buildings, which includes at least three or four hundred monuments and stretches over such a long period of time, might indeed be considered

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from various points of view (be they historical or technical), and it would take a big volume to give a full presentation of the material. Here we can only illustrate a few types of pagodas, and it seems to us most natural to classify them with a view to their most prominent architectural features; we have already mentioned a couple of wooden pagodas, and will here add a few words about pagodas which are pre-eminently brick structures, leaving aside others in which the elements of wooden structures are reproduced in brick or stone, to be considered in a later chapter dealing with the historical evolution of Chinese architecture. The pagodas are, indeed, all related in so far as they are towers erected for the conservation of Buddhist relics or as memorial monuments on sacred spots, but from an architectural point



A. Plan of Hsiao Yen t'a.
B. Plan of Ta Yen t'a. After drawings by Prof. T. Sekino.

of view they show considerable differences between themselves, and whereas the earlier ones may serve as milestones on the road of architectural evolution in China, the later ones have little importance in this respect.

A very important type of early brick pagodas in China, which hardly could have been derived from wooden structures, is the square tower with plain walls which are divided into storeys by corbelled layers of thin bricks. The most famous classical example of such pagodas, which traditionally are said to be in "Indian style," is the Ta-yen t'a (the Large tower of the Wild Geese) at Si-an fu (Plate 65). It was founded in the year 652 by the great Buddhist pilgrim and teacher, Hsüan Tsang, but partly rebuilt in 701, and restored at several later dates. The present pagoda which has five storeys seems, however, in architectural form to correspond quite well to the original T'ang building.¹

¹ Most of the dates concerning the pagodas in the neighbourhood of Si-an fu are to be found in the Japanese publication *Buddhist Monuments in China*, by Tokiwa and Sekino. Cf. Sirén, *Chinese Sculpture*, Pl. 422-425.

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It stands on a terrace about 5 metres high, and measures at the base about $25\frac{1}{2}$ metres square, its full height being almost 60 metres. The successive storeys which are accentuated by broad cornices, formed by six to eight layers of corbelled bricks, become smaller and smaller towards the top. Taken as a whole it reminds us of an elongated pyramid; the top storey has a pyramidal roof crowned by a glazed cone, which is now well covered by small trees and bushes, a rich vegetation which has struck root also on the cornices and threatens to ruin this venerable building. The walls, which are faced with yellowish lightly baked bricks on a mud core, have no other divisions than thin pilasters (10, 8, 6, and 4 respectively on the walls of the successive storeys), and a vaulted opening on each side. The interior division is made by beams and wooden floors, and a wooden staircase leads to the top. The imposing effect of this great tower depends mainly on its well-unified, powerful form, and it is emphasized by its situation on a natural elevation which lifts it above all the surrounding buildings.

Not far from this pagoda stands the Hsiao-yen t'a (the Small tower of the Wild Geese), erected in the years 707-709. The plan is similar but considerably smaller; it measures only about $11\frac{1}{2}$ m. square, and the tower is not a stepped pyramid, but a more slender structure with a slight swelling of the contours over the body. The storeys are very low but accentuated by similar cornices as on the Ta-yen t'a; they were originally fifteen, but of these only thirteen remain, as the top is worn off. No pilasters divide the plain brick walls, only arched entrances and windows on the south and the north sides. It is possible that this tower also had interior divisions with wooden floors, but how far they still exist is impossible to decide, because there is no longer any ladder or staircase.

More closely akin to the Ta-yen t'a, though in a still worse repair, is the pagoda of Hsiang-chi ssü, which is situated a little further southward from Si-an fu. The date of its erection was either 681 or 706 (the *nien hao* is either Yung Lung or Shen Lung). Of the thirteen storeys only ten remain; they are as in the previous examples divided by corbelled layers of bricks; the walls are considerably battered so that the elongated pyramidal shape becomes quite evident. The ground storey has no divisions, except the vaulted entrances, but in the upper storeys there are thin vertical and horizontal mouldings besides the arched windows.

A further development of the same pagoda type may be observed in the smaller tower of Hsing-chiao ssü, which was erected at the place (near by) where the remains of Hsüan Tsang were removed in 669. It has only five storeys, and the plan measures only 5.35 m. on each side, but here some elements of wooden architecture have been reproduced on the brick building; the storeys are not only marked by the usual cornices, but also by tiers of three-armed brackets which project from pilasters in high relief. The construction is essentially the same as in the other above-mentioned buildings, but by the outward treatment of the walls the tower reveals some influence from wooden architecture.

On each side of this tower stand a smaller three-storeyed pagoda (erected to the memory of holy men), simple brick buildings without any other divisions than

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cornices. Such minor quadrangular towers of mud and brick are quite frequent in China at the tombs of prominent Buddhist priests and teachers. One of the largest and most beautiful among them is the so-called Pai t'a (Plate 68 B), which is situated in the same neighbourhood as the above-named larger pagodas. Other examples, still of the T'ang period, may be seen at Shen-tung ssü in Shantung, and at Fang-shan in Chihli (where they are built of stone).

Among other early brick pagodas on a square plan may be mentioned the elegant fifteen-storeyed tower at Fa-yüeh ssü on Sung shan in Honan (Plate 69 A), which again may be of the T'ang period, and the celebrated pagoda of Pai-ma ssü, near Lo-yang (Plate 69 B) which was built in 1175, after the destruction by fire of an earlier pagoda at the same place.¹ The type of the building is still like that of the T'ang structures; it is square and divided by corbelled layers of brick into thirteen storeys. These cornices are, however, uncommonly large in proportion to the storeys, the tower is not so harmoniously proportioned as the earlier examples.

More successful in this respect is the square tower of K'ai-yuan ssü in Cheng-ting fu (Chihli), which also was originally built in the T'ang period but later on destroyed and reconstructed in the 18th year of Shun Chih, i.e. 1661 (Plate 68 A). The plan measures about ten metres square; the walls are slightly battered and the nine storeys, divided by powerful cornices, are growing gradually smaller towards the top. The walls are quite plain, only on the south side is an arched door and square windows in the upper storeys, but at the eight corners of the stone plinth are placed reliefs representing squatting giants, who seem to support the whole structure. The brickwork is remarkably fine, such as was done in the early part of the Ch'ing period, under Shun Chih and K'ang Hsi, when the pagoda was restored.

The prevailing form of the brick pagodas in the T'ang period was evidently the square tower with battering walls and horizontal divisions into storeys by layers of corbelled bricks. It is very simple but often beautiful by its proportions; as time went on, the tendency seems to have been to increase the size of the cornices in proportion to the storeys.

Special forms do, however, also occur as, for instance, the so-called "Nine tower pagoda," Chiu t'a, at Lin-ch'eng in Shantung, which was erected ca. 770 or shortly after (Plate 70).¹ The main tower is octagonal, comparatively low and provided with a very large cornice, the eight sides of which are slightly curving inwards. On the corners of the roof stand eight small pagodas of square shape, and in the middle a somewhat larger one. They have no organic connection with the main tower, the building as a whole appears more peculiar than beautiful, and is a notable instance of how freely the Chinese handled the architectural forms of these brick constructions. It also shows how this kind of masonry work on a core of mud carries in itself the germ of destruction; when water penetrates between the bricks, the core is prepared for a more or less abundant vegetation, which gradually breaks the covering layers into pieces.

Regular eight-sided pagodas of more or less conical shape have also been erected

¹ Cf. Tokiwa and Sekino, *op. cit.*

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since early times, the earliest one still standing, at Sung-yüeh ssü on Sung-shan, being from the beginning of the sixth century (Plate 105). A closer study of this very remarkable building, however, must be reserved for our chapter on the historical evolution of style. To judge by the remaining buildings, the octagonal pagodas do not seem to have reached a great popularity before the Sung period ; most of the examples known to us are built under the Sung, or under the Liao and Chin dynasties in the North ; but there are also some of the Ming period and later ones. One of the earliest examples of this type is the nine-storeyed pagoda of Chung-hsing ssü at Tso-hsien, Shantung, a very powerful tower which possibly may date from the end of the T'ang period (Plate 71). The corners of the octagon are here accentuated by rounded pilasters, and the broad cornices are supported in the lower storeys by brackets, and in the upper ones by manifold rows of lotus petals, all executed in brick. These motives become quite frequent on later pagodas, but they are here still comparatively restrained and the conical shape of the tower is more ponderous than in later examples.

Similar in style, though somewhat more elaborate in detail, are some of the octagonal brick pagodas in Hang-chou and Su-chou, which were built during the Wu yüeh and southern Sung dynasties (908-1279). The biggest of them, Lei-fu t'a in Hang-chow, has quite recently crumbled down, as the brickwork was completely corroded and split by water, but the tall cone of Pao-shu t'a is still standing (Plate 72 A), though in a very dilapidated condition. Better preserved is the so-called " Tiger Hill pagoda " in Su-chou (Plate 72 B) ; its leaning position does not seem to affect its stability. It is seven-storeyed, with an elaborate system of brackets under the cornices and has framed windows on all sides of the octagon. For picturesque beauty there are few which surpass it.

In the northern provinces a great number of pagodas, more or less adhering to this type, may be mentioned, but we can only stop at a few prominent examples. One of the most beautiful and best preserved ones is the T'ieh t'a, or Iron pagoda, in K'ai-fêng, erected in the Ch'ien Tê period (963-67) of the Sung dynasty, which has got its name not from the material in which it is constructed but from its outward colour (Plate 73 A, B). It is a regular brick pagoda on octagonal plan, built in thirteen storeys, and reaching a height of over 56 metres. The tower is uncommonly tall in proportion to its width (which is only 10 metres), and makes a very elegant impression. This is furthermore accentuated by its beautiful colour—a rusty brown-red, with splashes of green and yellow—produced by the glazed tiles with impressed ornaments and Buddhist figures which cover its surface. The brackets of the cornices and roofs are likewise made of glazed tiles, and in the niches, which take the place of the windows on the south side, stand yellow-glazed Buddhas (renewed in Ming period). The central portion of the tower is a solid cone about 6 metres in thickness at the base ; around this is laid a staircase, only 0.65 m. wide, covered by encorbelled vaults, by which the outer shell is tied to the core. It is thus possible to ascend to the top of the tower, though the staircase is exceedingly steep, narrow, and dark, the solidity of the structure having been the main concern

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of the builders who here have succeeded in erecting one of the most beautiful towers in China.

A still more important tower in K'ai-fêng was the Fan t'a (the Luxuriant or Magnificent pagoda) of the Kuo-hsiang ssü (Plate 74 A, B). It was founded in the second year of Hsing kuo (977), and then erected in nine storeys, but in the Ming period the upper part of the tower was taken down, and it has now only three main storeys, crowned by a little cone of two storeys. The plan is hexagonal and it is built with double walls and an open room in the centre, which in the ground storey is covered by a six-sided cupola constructed by encorbellling of the almost straight triangular segments of the hexagon. The coating of the walls both on the inner and the outer side is made by square bricks, each one with a Buddhist figure impressed into a round hollowed-out medallion. By these almost innumerable hollowed-out medallions the play of light and shade over the broad walls becomes very vivid and the structures assume a particularly picturesque appearance. It is a splendid example of the ornamental tendency in the brick architecture of the Sung period.

The outward decoration with figures and floral ornaments in baked clay is, indeed, an important feature on most of the brick pagodas of the Sung period. It is particularly well developed on the T'ien-ning ssü pagoda at Shun-tê fu, and also on the larger pagoda of Hsi-yü ssü at Fang-shan (Chihli), built during the Liao dynasty (South Sung period), as well as on several of the pagodas in the neighbourhood of Peking and Mukden, which were erected about the same time or a little later, when northern China was ruled by the Tartar dynasties. It is beyond our present scope to go into a detailed description of all these 11th and 12th century pagodas, which may be counted in dozens. Most of them are solid mud and brick structures with interior room only in the ground storey, whereas the upper portion is divided by roof-like cornices into series of quite low blind storeys, which have no existence in the interior of the tower. A somewhat different design has been used in the Pei t'a of Hsi-yü ssü at Fang-shan (Plate 75); the lower portion is here octagonal and built in two high storeys, decorated with ornamental reliefs, pilasters, door-frames, and bracketed cornices (all in imitation of wooden architecture), but the upper portion is bottle- or cone-shaped, suggesting the Indian dagoba-type.

More commonly, however, the whole tower is octagonal with one main storey and eight or ten quite low upper storeys, accentuated by encorbelled cornices, supported by double rows of brackets and covered by roofs, as may be seen on the so-called Nan t'a of Hsi-yü ssü at Fang-shan (Plate 76). The plinth on which the tower rests is richly moulded and decorated with both figural and floral reliefs, arranged in friezes, and furthermore, provided at the top with double rows of lotus petals, forming a kind of calix out of which the tower seems to rise.

This type of pagoda, i.e. the octagonal tower, slightly tapering towards the top and divided into a number of quite low blind storeys, is, indeed, the most common one in northern China, not only during the Liao and Yüan dynasties but also at the beginning of the Ming period. It is well illustrated by the Peking pagodas T'ien-ning ssü

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(Plate 77 A) and Tsu-shou ssü (Pa-li-chuan) (Plate 77 B), both thirteen-storeyed and decorated with large figural reliefs in the ground storey and on the high plinths. The great number of roof-like cornices over the very narrow storeys produce a vivid play of light and shade, and as they stand out in contrast to the high ground storey, it seems almost as if the tower had been compressed from the top.

Much larger and more harmoniously proportioned is the octagonal brick pagoda at Ting-chou in Chihli, also built during the Liao domination, between 1001 and 1055 (Plate 78 A, B). This huge tower, which has eleven complete storeys with arched windows, affords an unusual architectural interest not only by its size but also by its construction, which can be easily studied, because more than a quarter of the outer shell has collapsed on the east side. It consists of two towers, the one inside the other, which are bound together by very thick corbelled layers of brick at the successive storeys. Between the two towers is some open space, a kind of corridor (nearly 2 m. wide) in each storey, to which one may ascend by the inner staircase. Each storey has, so to say, formed a sanctuary of its own with statues and wall-paintings. The calamity which has befallen the pagoda shows, however, that the tying together of these two towers was not quite sufficient; when a portion of the ground storey of the outer tower was weakened or ruined by water, a big slice along the whole length of the tower slid down, thus revealing the core (Plate 79 A, B). This peculiar manner of construction was probably applied with a view to the unusual size of the tower, and it is, indeed, one of the most telling examples of the Chinese builders' highly developed skill in brick constructions.

More elegant and decorative varieties of the pagoda type here under consideration are represented by the so-called Ch'ing t'a or Lin-chi ssü pagoda in Cheng-ting fu (Plate 80 A) and at the Hsiu-tê t'a in Ch'ü-yang hsien (Plate 80 B). The former is a building of the Chin dynasty (1185), restored at various later occasions, the latter a foundation of the Yüan period but rebuilt in the reign of emperor Chia Ching of the Ming dynasty (1540). Characteristic of both are the doubled rows of lotus petals which encircle the upper edge of the pedestal as if they were forming a big calix in which the tower is placed. The ground storey of the Ching t'a is also beautifully treated with decorative sham-doors and windows and round pillars at the eight corners. The dividing cornices of the upper nine storeys are quite broad in proportion to the narrow tower and like projecting eaves supported by brackets. All these decorative elements seem to have been recast at some later restoration (probably at the beginning of the Ming period), but the general shape and proportions of the tower are uncommonly fine. The pagoda at Ch'ü-yang is in this respect less successful; the rhythmic division into storeys is here broken by a high middle section covered by five rows of small tablets supported by lotus leaves. The four upper storeys can hardly assert themselves at the top of these elaborate decorative intermissions, where the stucco ornaments are executed in a style which may be characterized as Yüan-Ming.

The regular octagonal pagodas with bracketed cornices and arched windows

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become quite frequent during the Ming period. New forms were hardly created, but the old ones were sometimes executed on a very large scale. The builders of this period seem to have taken less interest in the architectural composition and elaboration than in the size of the buildings which they were able to increase, thanks to their perfected technical methods. Brick architecture reached on the whole its highest development in China during the Ming. A tower such as the thirteen-storeyed pagoda at Fên-chou fu in Shansi, which reaches a height of nearly 70 metres is, indeed, a highly remarkable specimen of pure masonry construction (Plate 81 B). It is built with double walls which are bound by strong vaults and by the staircase, which is laid between the two octagons in a series of short straight flights of steps. Every storey is provided with brick floor and the arched windows correspond in the outer and inner walls. The brickwork is of an excellent kind, as may be seen, for instance, at the arches which are made of four successive bands of standing, and lying bricks. No covering stucco or any kind of decoration has been used but in each storey there is a large wooden statue of a Bodhisattva seated on an animal (*kilin*, dragon, bull, horse, tiger, lion, etc.) (Plate 82 B). These statues verify the date of the structure, which probably is from the latter part of the Ming period.

Sometimes a single pagoda was not sufficient, but two quite similar ones were built at the same temple. Such "Shuang t'a," or pagoda-pairs, may be seen in Peking, not far from Ti Wang miao in the West city, but a much finer pair stand outside T'ai-yüan fu at the previously mentioned temple Yung-tso ssü, which is provided with a dated inscription of the year 1611 (Plate 81 A, 82 A). They are not as high as the pagoda at Fên-chou, but built in a similar fashion and very successful in their proportions. The drab monotony of the grey brick colour is to some extent relieved by blue-glazed tiles on the roof-like cornices, and in the lower storeys some decorative friezes and balustrades of brickwork have been added. Both towers have thirteen storeys, and they are, practically speaking, twins, even if there is some slight difference between them in size.

A special form of pagoda, which became in vogue during the reign of the early Manchu emperors, is the "Indian" dagoba, or the bottle-shaped tower, placed on a high, square, often richly moulded substructure. It is well known to all who have been in Peking, because the White Pagoda on the island in Pei hai can be seen wide and far. This was built by the Emperor Shun Chih (in the year 1652) in commemoration of the first visit of the Dalai Lama to Peking (Plate 83 B). Another similar tower in Peking, built entirely of brick with no marble coating, is the so-called Pai t'a at Miao-ying ssü in the West city (Plate 83 A). Half a dozen more examples, in a somewhat dilapidated condition, are to be found in the neighbourhood of Mukden and a taller one (of the Wan Li period) at Wu-t'ai shan. None of these can be called beautiful in an architectural sense—the swelling body of the bottle and its long neck with an ornamental plug are strangely non-tectonic—but they are picturesque and show how readily the Chinese adopted masonry even to quite strange imported forms.

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The later pagodas after Indian fashion, as, for instance, at Pi-yün ssü and at the Yellow temple in Peking, are made of white marble which was used so abundantly for Imperial buildings in the time of Ch'ien Lung (Plate 83 c).

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STONE PAGODAS AND SOME OTHER BUILDINGS IN STONE

Most of the pagoda types which we have passed in review were executed not only in brick but also in stone, some even in iron. The stone buildings were developed particularly in the south, where brick architecture never was used to the same extent as in the north, and even there it seems to have supplanted earlier constructions in wood. This is illustrated in the most complete fashion by the two large octagonal stone pagodas at Ch'üan-chou, near Amoy (Plate 84 A, B), on which the elements of wood architecture such as brackets, beams, and the like, are faithfully reproduced, though the actual construction is carried out in stone. According to inscriptions these pagodas were executed between 1228 and 1247, and they may well be considered two of the most remarkable stone buildings in China. They are built of granite, replacing earlier pagodas, which were first of wood and then of brick. The construction is carried out with a clear understanding of the special requirements of the material, which consists all through of carefully hewn granite blocks, no undue fillings being used; the arches are made in *voussoir* fashion, and the blocks are fitted with perfect precision. As the pagodas, furthermore, are decorated with a great number of Buddhist figures in high relief, they offer, indeed, scope for a special publication soon to be brought out by Dr. G. Ecke, who, by his rich photographic material, has made us acquainted with these monuments.

The square pagoda type which we studied in some brick constructions of the T'ang period is also well brought out in a number of minor stone pagodas, four of which stand around the Pei t'a at Fang shan in Chihli (Plate 85 A, B). One of them is dated in the year 740, and the others seem to be of about the same time. They are fitted together of flat lime-stone slabs, and provided with some sculptured decoration both inside and outside, and as they are of very moderate size, they appear less as actual buildings than as architectural stone monuments.

A larger stone pagoda with more abundant sculptural decoration is the Lung-hua t'a at Shen-tung ssü in Shantung (Plate 86). It is built on a square plan and consists of three distinct portions, i.e. a substructure divided into three storeys by far projecting stone cornices, a middle section with niches, profusely decorated with sculptures, and a top section in two low storeys, each of them with a double row of brackets carrying projecting roofs. The combination of these various parts is rather non-tectonic, so that the whole building with its many projections, deep mouldings and overflowing sculptural decoration makes a strangely baroque appearance. But the same stylistic tendency towards a dissolution into masses of light and shade

STONE PAGODAS

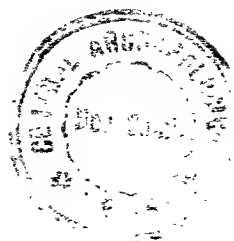
may also be observed in sculptures from the latter part of the T'ang dynasty, when this pagoda probably was built.

It is only natural that the stone pagodas should be richly decorated with sculptures, and most of them gain, indeed, more interest from their plastic decoration than from their architectural construction. This is true of the small octagonal stone pagodas at Ling-yin ssü at Hang-chou (Plate 88 A), and also of the larger octagonal pagoda at Ch'i-hsia ssü, near Nanking (Plate 87). Both of these are probably of the Wu Yüeh period (10th century), and very beautiful monuments of their kind, but they give the impression of being modelled or hewn in stone rather than constructed. The fitting together of the stone slabs is indeed of less importance from an artistic point of view than their moulding and treatment with high relief decorations. It may not thus be necessary to dwell further on these towers in a discussion of stone architecture in China.

A rather isolated example from the northern part of the country is the small cone-shaped stone pagoda near Chu-ho ts'un in Ch'ü-yang hsien, Chihli province, which is built on octagonal plan in eleven storeys, though hardly over 25 metres high (Plate 88 B, C). The material is the micaceous white marble so common in the district of Ch'ü-yang; it is cut into flat blocks (some of them in corner shape), which are fitted without any mortar. The cornices are formed by projecting slabs, which are moulded on the under-side, and below these are freizes with figure reliefs which indicate by their style that the pagoda was not built before the end of the 12th century.

Actual stone buildings have no doubt been erected in China from time to time, but mostly on a small scale and for special purposes, such as mortuary chambers, small sanctuaries, etc. The still existing examples of an early date are very rare. Most important among these is the so-called Four Gate pagoda, Ssu-mên t'a, at Shen-tung ssü in Shantung, which was erected, according to an inscription, in the year 544, during the Northern Ch'i dynasty (Plate 89). Although the building is called a pagoda, it is by no means a tower but simply a one-storeyed house on a quadrangular plan (7.36 m. square), with a large central pillar (2.25 m. square), which serves to support the pyramidal roof. The whole building is made of carefully dressed, light-coloured limestone blocks which are outwardly striped. The roof, which is laid with corbelled stone slabs, projects over the sides with five successive layers, forming a broad cornice. On each of the four façades is an arched doorway, constructed on the outside of well-fitted stone blocks forming voussoirs, while the inside of the arch is covered by a kind of stone drapery. The building may thus be quoted as a proof of the fact that the Chinese already in the sixth century were well familiar with voussoir construction, which presupposes a long practice in stone architecture. The building has no outer decorations (in the interior are some Buddhist statues), no divisions or mouldings, but it is a complete and pure work of art, which asserts itself very strongly by its well-unified harmonious form and perfect proportions.

To what extent similar constructive methods were used since early times is at present difficult to tell, as the other stone buildings with voussoir constructions



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still standing in China are of comparatively late date. Special mention may here be made of a small temple at T'ien-lung shan (Plate 91 B), built entirely of stone, except for the roof which evidently is the result of a restoration. The rather low room is completely covered by a barrel vault; the doorway and the two windows have rounded arches, each constructed with only three stone slabs. The building is, as a whole, of a quite simple, rustic kind, and comparatively little care has been bestowed on the fitting of the blocks, but the worst parts are evidently those which have been restored later. The original portions of the building seem to date from pre-Ming times.

The most perfect example of a vaulted stone building known to us from China is a tomb chamber of the Ming period, which formerly rested in the soil of Honan but in late years has been transferred to the Museum in Toronto, Canada. The photograph taken of this burial-chamber *in situ* shows a rectangular room with barrel vault, the low walls being made of lying slabs, and the vault of carefully dressed curving stones with a keystone in the middle in voussoir fashion (Plate 90 A, B). Heavy stone doors made of single blocks served to close the almost square entrance, which is not vaulted but covered by a lintel of one long stone beam. The technical part of this construction is remarkable for its exactness; it is on a level with some of the much admired Roman constructions.

Such subterranean structures exist, no doubt, in great numbers in the soil of China, though they have not as yet been unearthed. According to Chinese observers, who have had occasion to see opened tombs of various periods, those of the T'ang and later dynasties were often lined with stone, while the earlier ones, as a rule, had only brick coating on the walls and the ceiling. If the tombs, for instance, of the Ming emperors were opened, we should probably come upon some very impressive vaulted chambers.

A closer study of these monuments is as yet not possible; we may instead direct our attention on another architectural creation of the same period which also is mainly situated below the surface of the soil, though it is not built over like a tomb, but entirely open, roofless like a big pond. It is situated near Ch'u-chou in Anhwei, and is traditionally known as "Hung Wu's bath," a designation which seems to point in the right direction (Plate 91 A). We are at a loss to find some other explanation of this peculiar architectural composition, and circumstantial reasons make it also probable that it dates from the time of the first Ming emperor. He lived for some time, before he settled in Nanking, in the neighbourhood of Ch'u-chou and Pêng-pu, and founded, not far from here, his first Imperial capital, at Fêng-yang, which, however, was soon again abandoned. One of Hung Wu's sons is buried at Ch'u-chou.

The building in question is a large basin, about 21 metres square and 6 metres deep, with sides of well-dressed large stone blocks. It contains in the centre a small hillock of gravel crowned by a round stone, and at the four corners octagonal stone pillars, which reach above the level of the surrounding terrace. This is in the nature of a paved road (about $6\frac{1}{2}$ m. wide), and here may still be seen the plinths of stone

STONE BRIDGES

pillars, three at each corner, forming together with the corner pillar in the basin a square, which may have been roofed over or made into some sort of a corner pavilion. The facing of the upper terrace wall, which also is a cutting (about $4\frac{1}{2}$ m. high), below the surface of the soil, is made of brickwork, and the entrance to this plane is in the shape of an arched doorway from which a sloping tunnel leads up to the level of the surrounding country. Another smaller vaulted opening in the stone wall at the bottom of the basin leads in to a curving tunnel, which may have served as a water conduct (?), though it now ends in a small room some 20 metres from the entrance. At the time of my visit to the place there was hardly any water in the basin, but it is said to be nearly filled after heavy rains. The use of it seems, nevertheless, rather problematic, but whatever it may have been, the construction is well worth noticing, particularly because of the monumental stone pillars, the carefully dressed stone walls, and the tunnels constructed of stone and brick.

THE STONE BRIDGES

The most frequent stone structures still to be seen above the soil in China are neither pagodas or temples, nor dwellings, but bridges and gateways. For such purely utilitarian buildings which should be made to last for centuries, stone was often used, though, as a rule, in combination with brick or similar material. Many of the bridges still existing in China are among the finest specimens of stone architecture to be found in the country, their arches are sometimes 12 to 14 metres wide and solidly constructed so as to support a considerable weight. It is far beyond our scope to pass in review all the beautiful stone bridges of China, they may be counted in many hundreds—only a few examples from different parts of the country can be mentioned.

In the North, particularly around Peking, are many bridges built in the time of the Yüan and early Ming emperors, though, of course, repaired or reconstructed later, which does not, however, imply that their architectural appearance has been changed. They lead over the various rivers in the neighbourhood of the capital, Hun ho, Sha ho, Ching ho, etc., as well as over the Tung ho canal and other similar watercourses, which were regulated already in the Yüan dynasty.

The longest of these bridges in the neighbourhood of Peking is the Lu-ko ch'iao, popularly known as the "Marco Polo bridge," because the Italian traveller mentions it (Plate 92 A). It leads over the Hun ho (also called Yung-ting ho), and is preceded by a small fortress erected in the Ming time for the defence of this main highway from the South to Peking. The bridge is said to have been erected originally in the time of the Chin dynasty between 1189 and 1194, but it has been repaired on several occasions, most thoroughly in the time of K'ang Hsi after it had been carried away by a flood. The full length of this construction is over 300 metres, the bridge itself being about 220 metres long and the abutments about 30 and 60 metres respectively. It is now supported by eleven arches with spans of about 14 metres (slightly varying) and about 6 metres in height over the water-level, but it is said to have had originally

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thirteen arches. The arches are built in *voussoir* fashion of large stone blocks (reaching a thickness of nearly one metre), but at some places they have been repaired with brick and mortar, which, no doubt, also has been used for the filling of the heavy piers, the lower portion of which is prow-shaped and strengthened with iron clamps towards the stream. The central arch, which is slightly higher than the rest, is decorated with a big lion-head, otherwise they have simply broad flat archivolts. The gangway of the bridge is $7\frac{1}{2}$ m. wide, paved with large stone blocks and enclosed by solid stone balustrades with posts crowned by lion-shaped finials. The entrances at both ends are marked by "hua piao" pillars and very large inscribed tablets (formerly covered by pavilions), on which the repairs of the bridge are recorded.

Another long bridge, though only about 150 metres, is the Pa li ch'iao, which leads over the Tung ho canal and is provided with one large and two smaller arches (Plate 92 B), the width of the canal is only one-third of the whole length of the bridge, which thus, as usual, is drawn far out over the canal banks. These long slopes by which the bridges are tied at the shores, are most characteristic of all the great bridges in China; one seems to rely more on bulk and weight than on purely structural qualities. Yet most of these bridges are furnished with stone arches, though always placed within a heavy body of brick or gravel, which strengthens the arch and makes the bridge safe even for very heavy loads. The stone blocks in these northern bridges do not, as a rule, form the main constructive material but an outer coating of the arches which, however, are made as *voussoirs*. This can be seen very clearly at some of the half-destroyed bridges, as, for instance, those which lead over the moat outside the north wall of the former Yüan capital (Plate 93 A, B): under the big stone slabs, which in part have been broken away, appears the body of brick and mud into which also the side walls and the stone facing of the arches were fixed with mortar. In other instances, such as the bridge over the canal at Tung-p'ien mên, stone blocks are used only for the foundation of the pillars and as a rim on the arches (Plate 94 B), otherwise the brickwork is left in the same fashion as at the city walls. On the bridges which cross the moat of the Forbidden City (Plate 95 A), and the "Golden River" within the palace courtyard, the facing is made of marble blocks, which are most carefully dressed and fitted, but the structural body is quite the same as in the above-mentioned examples of a more rustic kind. The keystone of the arches is sometimes decorated with a lion-head in high relief, and at some of the old bridges there are crouching animals placed pairwise at both ends as if they were looking down into the water. The main sculptural decoration is, however, displayed on the balustrades made of stone panels joined by square posts. The panels are usually moulded, sometimes even decorated with reliefs, as on the "Ox Bridge" (Mang-niu ch'iao), where a pair of big oxen stood at both ends of the bridge (Plate 93 A); the posts are ending in finials which may take the form of seated lions or sculptured roundels. The finest balustrades are of course at the marble bridges in front of the palaces and Imperial temples, which thus often become architectural monuments of splendid decorative effect.

The most beautiful examples of such palatial bridges, which form a class of their

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own, are those which lead across the lakes of the Sea Palaces or over the straits and canals at the Summer Palace. These are not constructed with a view to any heavy traffic, either below or above, but as palatial pathways, an adaptation which has permitted a particularly decorative development of the structures and many picturesque deviations from the ordinary bridge type. Thus we find that some of these minor bridges do not follow a straight line across the water but are curving horizontally as well as vertically; the view becomes different from the two sides, as may be observed at the bridge leading over to the pagoda island in Pei hai, or at the bridge in Chung-hai, which describes an S-line (Plate 95 B). One of the most popular examples among these decorative bridges is the Camel-hump bridge, which forms an excessively high, pointed arch over a straight of the K'un-ming lake at the Summer Palace (Plate 96 A). It looks quite frail and elegant with its superstructure of richly sculptured balustrades, but as the two ends are strong and massive, it could no doubt carry heavy loads.

No less remarkable from a decorative point of view is the seventeen-arched marble bridge at the same place which connects the mainland with an island in the lake (Plate 96 B). Its long gentle curve eternally mirrored in the shallow waters of the K'un-ming hu, is one of the most beautiful features of this secluded spot of artificial harmony.

The bridges in the provinces of the Yang-tzū valley are, as a rule, of a more elegant type than those in the North. They are constructed mainly of stone with comparatively narrow piers and very high and wide arches. Splendid examples of such bridges may be seen in Hsü-chou and Ch'u-chou in Anhwei; at the former place is a very long bridge leading over the old bed of the Yellow River, at the latter place are two remarkable bridges, the one in the city, the other just outside it, with spans about 10 metres wide and nearly as high (Plate 97 A, B). They are pure stone constructions, very narrow in proportion to their height, which in conjunction with their lofty arches and slight superstructure make them appear exceedingly elegant.

The classical cities of bridges in China are, however, those southern canal cities such as Su-chou, Hang-chou (the city of a thousand bridges, according to Marco Polo), Ka-hsing, Nanziang, Quin-san, and other small half-forgotten nooks in Chekiang and Kiangsu, where the transports and communications are carried on by water more than by land, and where bridges have formed since the earliest times the essential feature of the city planning. They are usually built up into considerable height with one or three wide, often slightly pointed, arches, under which the houseboats and large "sampans" can pass freely, and quite narrow in proportion to their height (Plate 98 A, B). The road over the bridge is furnished with steps necessary because of the steep access, more or less in the same fashion as on the Venetian street-bridges, and they are on both sides provided with plain balustrades. The construction may be described as a combination of corbelling and voussoirs, the latter being used in the lining of the arches, which is quite thin, whereas the main body of the bridge is built up of corbelled blocks strengthened with transversal beams, which serve to support the roadway. In Su-chou itself, where the space is narrow

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and the buildings crowd along the canals, the arches of the bridges sometimes are carried almost into the buildings and the access to them may be laid in a right-angle. By such arrangements astonishingly picturesque effects are sometimes produced, which are still heightened by the never-ceasing medley of the boats floating below.

An important stone bridge which is known to me only through the photographs of Dr. G. Ecke, is the one which leads over the Chiu-lung river, west of Amoy (Plate 99). It is said to have been built at the beginning of the 13th century, and though some parts of it have been restored at later times, the whole construction is evidently of an early date.¹ It is not vaulted but built of stone beams, which reach a length of about 17 metres. Three such enormous beams are laid side by side across each span, supported by solidly constructed broad pillars, which are ending in the shape of rising prows. There are twelve complete and two half spans, the whole bridge being 270 metres long. It is, indeed, the most stupendous example of a kind of bridges which probably existed in olden times across several rivers, though they have been destroyed or replaced by arched constructions, which, after all, could be more easily handled.

It is possible that the early bridges in China were made with straight stone beams before vaulting became of common use, yet, to judge by some reproductions on Han reliefs, the technique of vaulting seems to have been well known already at that time. It was preferably developed in masonry work (which was more common in the North than in the South), but stone arches in the shape of voussoirs appear also at some early buildings, as we have seen, and they may be further illustrated by some monumental gateways among which the Chü-yung kuan, near Nan-k'ou, is the most important (Plate 100). It was built in 1345 as a defence for the Nan-k'ou pass, and profusely decorated with Buddhist reliefs. The arch, which is encased in the stone wall, is on the outside rounded, but on the inside divided into three flat planes, probably with a view to the decorative reliefs which could be more easily displayed here than on a curving surface. From a constructional point of view it belongs to the same group as many of the bridge vaults, but it is carried out on an enormous scale and with a display of sculptured details that make it an outstanding monument of decorative stone architecture in China.

¹ Cf. G. Ecke, *Chiang Tung Ch'iao*. Ostasiat. Zeitschrift, 1929, H. 3.

NOTES ABOUT THE HISTORICAL EVOLUTION

The great majority of Chinese buildings were, as we have seen, not erected in very permanent materials, and they have consequently perished or been made over during successive ages. Authentic early buildings in China are very scarce ; they are altogether too rare and incomplete to permit a full survey of the evolution of style within Chinese architecture such as might be reached within the other arts of China. It would thus be practically impossible, at the present stage, to obtain an idea about the evolution of the constructive and stylistic features, were it not that the missing early examples to some extent could be substituted by minor reproductions in clay or stone and by well-preserved Japanese buildings in wood of corresponding periods and types. The early temples and pagodas of Japan were in many instances constructed after Chinese models, sometimes even by builders who had been called in from the mainland ; they were imported with the new religion and their essential constructive features remained the same wherever they were erected. It is thus particularly within the domain of Buddhist structures that we may trace certain elements which illustrate the historical development, but these do not start until the 5th or early 6th century, when Chinese architecture already had reached a well-matured stage.

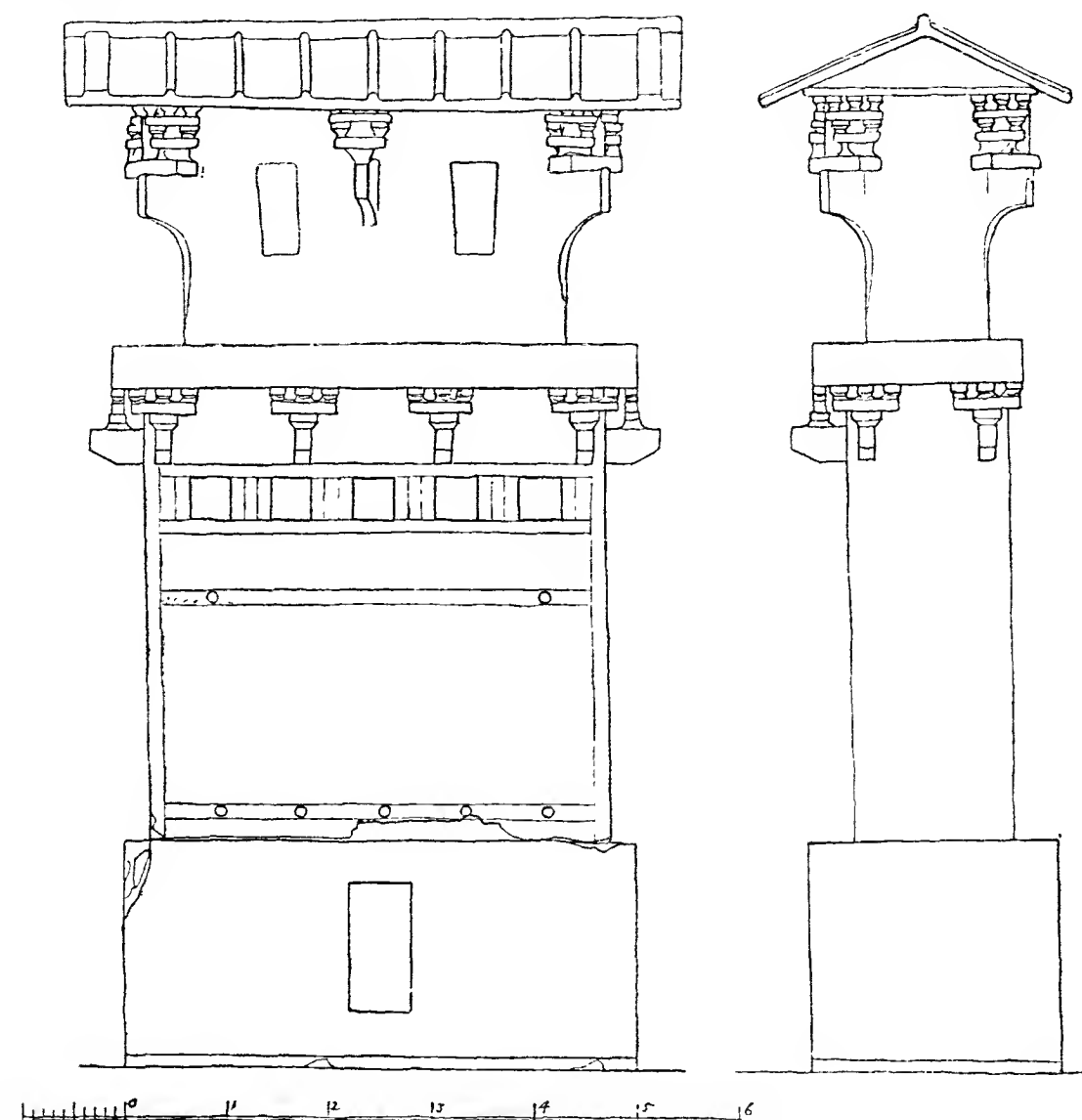
Long before then—probably as early as in the Shang or the Chou period—the principal types of Chinese buildings, such as the *tien*, the *t'ai*, the *lou*, the *t'ing*, and others, had been developed into forms which, even if they were somewhat more primitive than those we know at present, must have been essentially of the same kind. The greatest development of the building activity in China was, however, a result of the political events by which the scattered parts of the country were reunited into one empire. Shih Huang Ti, the famous Ch'in emperor, was not only a great empire-builder, but also a builder of enormous palaces, which are described as wonders of architecture in the old chronicles. But they did not last very long ; practically all of them were destroyed a few years after the emperor's death. The early rulers of the Han dynasty had thus to build their own palaces anew, and if we may believe the old chronicles, they did this on a magnificent scale. The capital of the Western Han dynasty, which was situated a few kilometres north-west of Si-an fu, contained a great number of famous palace compounds which were not only large, and imposing, like those of Shih Huang Ti, but also adorned with decorative devices of extraordinary splendour and refinement.¹

Nothing of these wonderful structures has survived except perhaps a mud terrace at the site of the Western Han capital, which may have served as a substructure

¹ Cf. Sirén. *Les capitales chinoises de l'ouest durant les dynasties Tcheou, Ts'in et Han*, Japon et Extrême Orient, Nov.-Dec., 1924, in which article the author gives a more detailed account of the Han dynasty capital, based on Chinese local chronicles.

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to one of the big halls of Han Wu Ti's famous palace, Wei yang kung. If we want to know something about the architectural appearance of the buildings of this period beyond what is told in the chronicles we have to turn to reproductions in stone and clay, which have been excavated from the Han tombs. Best known among these



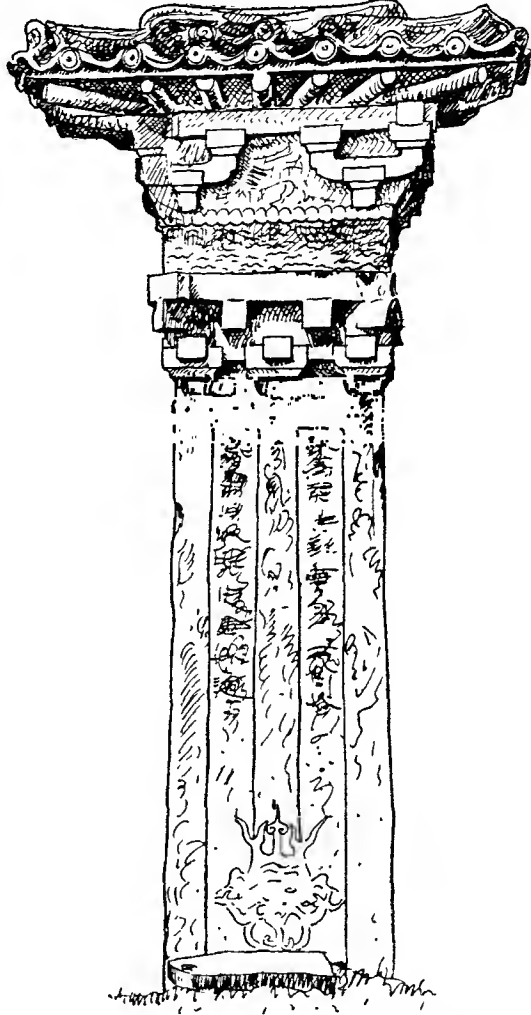
Brick model of a Han building. Drawings by H. Moeller.

are the stone reliefs which formed the walls of a small "spirit chamber" at the Wu family tomb in Shantung (Plate 101), but there are also other tomb reliefs from the same province, on which scenes from the life of the deceased are represented within architectural framework (Plate 102). The reproductions of the buildings are naturally very much simplified, but the essential elements, such as the carrying-pillars, the doubled rows of brackets, the terraces, and the far-projecting

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roofs are all there and represented according to a definite style. It is thus not only the general shape of the buildings, which mostly are two-storeyed halls, which interest us here, but also the style of certain constructive parts.

These may be still more clearly observed on some minor clay models of houses and towers which were made for the tombs as representations of the buildings of the deceased (Plate 103), and on some of the roofed stone pillars which stand in front of certain Han tombs in Shantung and Szechuan. Characteristic of all these is a certain massive solidity and a tendency towards square forms. In the clay models the brackets are represented as quite straight crossarms, with square cushions on the cantilevers. They are placed in two layers and support a kind of simple straight architraves, on which the balcony of the floor above or the roof-beams rest. At the stone pillars, which are of considerably larger size, the arms of the brackets are slightly curving, but very heavy and ending in square cushions (Plate 104 c). The other members, such as the beams and the capitals of the flat pilasters, are also quite heavy, which may be partly due to the execution in stone. We may safely assume that the larger structures had several rows of brackets and that these were not so large and clumsy in proportion to the buildings as they appear on the stone pillars. The overhanging roofs are only slightly curving and marked by exceedingly broad and heavy ribs, which terminate in round ornamental tiles, and by a more decorative treatment of the corner and main ridge.



Tomb-pillar at Ch'iu-hsien, Szechuan. Han period.
Drawing by H. Moeller after photograph.

These indications about the general appearance and certain constructive parts of the Han buildings are somewhat meagre, but as far as they go, they produce a definite impression of style, which also is corroborated by a small stone building of the period, still existing (Plate 104 A). We refer to the stone chamber at Hsiao-t'ang shan, which served as antechamber to a tomb erected in the year A.D. 129.¹ The most interesting features of this are the broad and low roof and the hexagonal pillars

¹ Cf. T. Sekino, *Stone mortuary shrines with engraved tablets of the latter Han dynasty*, Kokka, No. 225 (1909); and E. Chavannes, *Mission archéologique dans la Chine septentrionale*, Paris, 1915.

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on the façade. The middle one is provided with a plinth and a capital both consisting of a plain square cavetto and a square abacus block, the whole being rather thick-set and clumsy, possibly with a view to the execution in stone. On wooden buildings the pillars, no doubt, were of wood, as also appears at the stone reliefs mentioned above and on the stone slabs from Hsiao-t'ang shan, which have engraved designs. Yet the tendency towards a certain heavy squareness is always more apparent than elegance or picturesqueness. It may, furthermore, be recalled that among the stone slabs from the tomb at Wu-liang tzü are two capitals of a very simple type (Plate 104 B); they are square, with the four sides slanting, resembling quite closely the simplest kind of Romanic capitals. This resemblance would probably become still more striking if there were more buildings with pillars and capitals known of the Han period; the little that remains, in reproduction or in original, points in this direction. The architecture of the Han dynasties was, no doubt, stamped by the same energy, strength, and manliness as may be observed in many other kinds of artistic products at this period.

Buddhist temples and pagodas were probably erected in China since the first century of our era. The first reports of the new religion reached China through an emissary from the land of the Indo-Scythians, who arrived at Ch'ang-an in the year 2 B.C., but it did not really gain ground until the second century after Christ. The pilgrims who journeyed between China and India were of the utmost importance in this connection. They brought news not only of the writings and images of the new religion, but also of its buildings. It is specifically reported that small bronze models of Kanishka's famous stūpa in Peshawar (erected in the first century A.D.) were brought home to China by the monk Hui-Sheng, who accompanied a mission to India in the year 518.¹ This was certainly only one of many cases, for the said pagoda seems to have been one of the most famous and valued monuments of the Buddhist world, and it certainly acquired great importance as a model of Chinese pagodas also. So far as we can judge by Indian reproductions, which revert more or less directly to the famous original, it was erected on a square terrace, but the main part of the structure appears to have been bell- or bottle-shaped and divided by projecting cornices into three (or more) storeys. Especially characteristic of this pagoda was the high mast with nine metal discs and a large crowning lotus bud.

There does not exist in China to-day any pagoda exactly corresponding to this, but it deserves mention that Prof. Sekino has published a rubbing of a drawing on stone, dated 541, which reproduces such a pagoda.² It thus appears not improbable that such really existed in China. We have also reason to suppose that the earliest pagodas in China, as those of India, were erected in places which it was desired especially to distinguish as sacred or historical, as well as to serve as storehouses for sacred writings and images brought by pilgrims from the homeland of Buddhism. They were erected, however, in ever-increasing numbers at Buddhist temples, and according to the

¹ Cf. W. P. Yetts, *Writings on Chinese Architecture*, Burlington Magazine, March, 1927.

² *The Journal of the Institute of Architects of Japan*, 1922 (in Japanese).

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popular Chinese beliefs, coloured by the primitive nature-religion of the people, some of these high towers also possessed a protective and beneficial significance due to their influence over the "fêng shui," the spirits which dwell in the air, the earth and the water, and which are of the utmost importance in the daily life of mankind. In this as in so many other fields there was a fusion of the old and the new religious ideas.

The most ancient known pagoda in China is at a temple called Sung-yüeh ssü, which stands on a terrace of Sung-shan in Honan, one of the five sacred mountains (Plate 105). According to credible historical records, it was erected about 523, when the palace, which previously stood here, was consecrated as a temple.¹ It is built of brick on an octagonal plan and reaches a height of over 40 metres. The lowest section consists of a plain but rather high ground storey above which follows a broad cornice made of no less than twelve layers of encorbelled bricks and then the strongly articulated main storey (Plate 106). Hexagonal pillars (made of brick) standing on round plinths accentuate the eight corners, and between these are placed a kind of ædiculæ, or screen-façades, with arched windows framed by flat ornamental archivolt. Under each window are two seated lions placed in a kind of low oval niches. The upper part of the tower is in the shape of a high cone with slightly convex contours; it is divided by the broad cornices (of the same type as the one mentioned above) into fifteen blind storeys. Owing to the elastic swelling of the contours, the tower acquires a more elegant and pleasing aspect than later octagonal pagodas of a similar kind. It is crowned by a large bud or ovoid cone, decorated with nine rings which, so to say, serves as a substitute for the mast with the metal discs customary in the wooden pagodas. Quite characteristic of this early period are the lion reliefs, the elastic arches, ending in a kind of spirals or springs, and the slender hexagonal pillars which are provided at the top with a casing of lotus petals (†). This same shape of pillar and lotus "capitals" may be seen, better executed in stone, at the entrances to several of the caves at T'ien-lung shan (middle of the 6th century).

The pillars are used to support somewhat depressed rounded archivolt and provided with top ornaments, not to say capitals, which more or less approach the shape of lotus flowers (Plate 107 A). In some instances long-tailed birds are placed on these capitals, forming thus a decorative accentuation of the foot of the arch, but in other examples, which are, perhaps, more satisfying from an architectural point of view, the arch starts directly from the lotus capital (Plate 107 B). The origin of these is probably Indian or Central Asiatic; they may have been introduced with the Buddhist motives from the same sources. Lotus petals are on the whole the most common decorative motives, be it on the supports, the pedestals, or even the shafts of the pillars, where we find them tied like a casing around the shaft and sometimes also around the archivolt.

The architecture just as well as the sculpture of this time was, no doubt, closely dependent on models from the homeland of Buddhism, which served to modify the earlier Chinese forms. The architectural motives appearing in the reliefs at

¹ Cf. Tokiwa and Sekino, *op. cit.* Part II, Plates 140-141.

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Yün-kang are, however, on the whole of a rather primitive provincial kind, which does not convey much new information as to the architectural style of the period.

More interesting examples of stone pillars may be observed at the Liang tombs near Nanking (first half of 6th century), which have been described in our volume on sculpture. These pillars have fluted shafts, like Doric columns, though they are not intended for any other purpose than to carry small lion statues (sometimes missing) (Plate 107 c). The fluted column appears, indeed, as a foreigner in China, particularly when placed on crawling chimæras, and it seems difficult to explain without accepting some special influence from India or Western Asia.

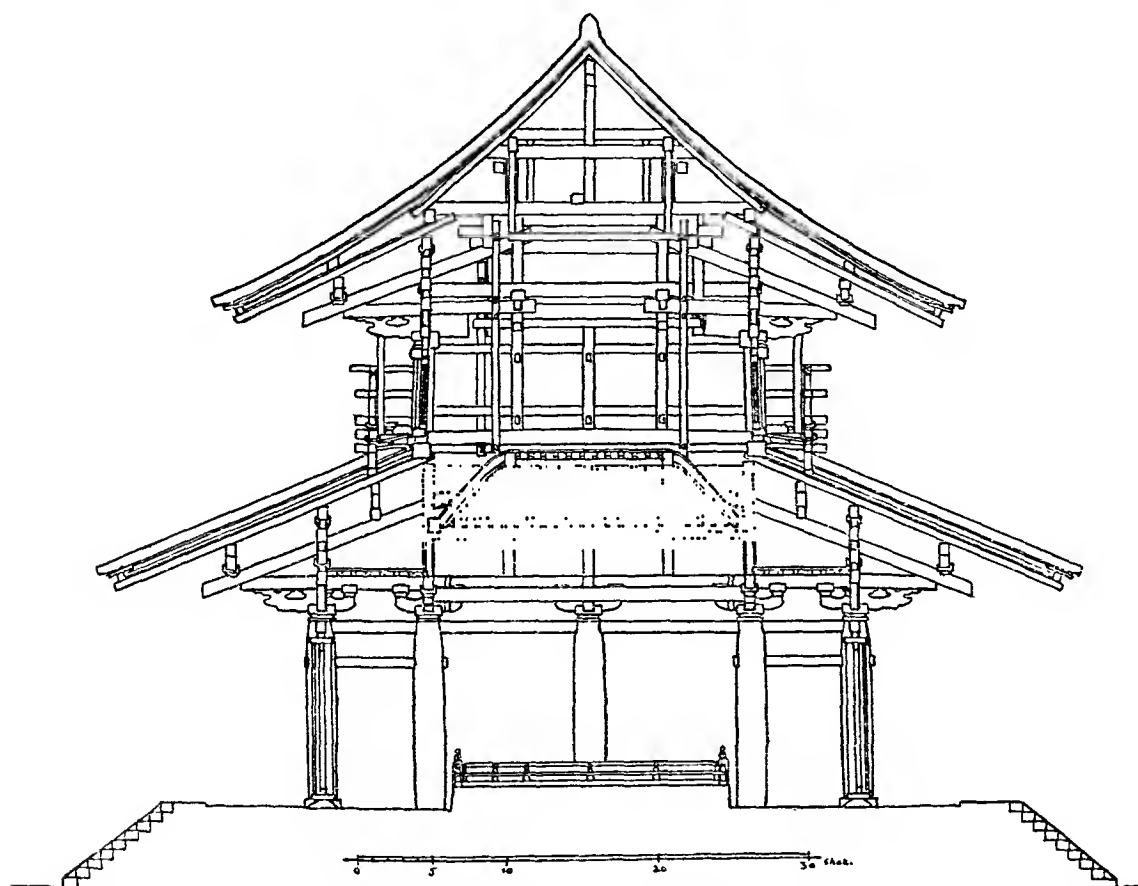
There is no other pagoda in China of even approximately the same early date as the one at Sung-yüeh ssü (particularly as we do not count the previously mentioned Ssü-mên t'a among the real pagodas), but the type—a many-storeyed cone on a high octagonal ground storey—recurs, as we have seen, in a number of pagodas from T'ang and later periods.

The Sung-yüeh ssü and the other pagodas of the same type are pure brick buildings, sometimes with reminiscences of constructive features which originally were developed in wood, but there existed, no doubt, also at this early period, pagodas (as well as other buildings) which were mainly of wood. One of the largest among these appears to have been the pagoda which was erected at Lo-yang in the year 516, by order of the empress Hu of the Northern Wei dynasty. It is said to have been a "thousand feet high," and to have carried a spire one hundred feet above the roof, traditional statements which may be taken simply as indications of its unusual height. It was destroyed by fire already in 534, and the old descriptions may thus be based merely on hearsay, yet they are of a certain interest as confirming the assumption that large wooden pagodas were built in China as well as in Japan, where they still may be studied in original. We may therefore revert to these in order to gain some idea about such wooden structures, but before doing so we like to recall that there are reproductions of similar wooden pagodas among the cave sculptures at Yün-kang and Lung-mên, which, indeed, are additional proofs of the existence of such buildings in China at the beginning of the 6th century (Plate 108 A, B). They are three and five-storeyed towers on a square plan, with strong supporting corner-posts, and far projecting roofs over the successive storeys. Through the tower rises a mast, which at the top is decorated with nine metal rings or a small Indian stūpa (as may be seen in the Yün-kang reliefs).

The best examples of similar structures in Japan are to be seen at Hōryūji and Hokkiji, two of the temples of the Suiko period (7th century), in the vicinity of Nara. They may have been erected by builders called in from China or Corea. The Hōryūji pagoda has five storeys, the one at Hokkiji only three (Plate 109). The bracketed roofs are very far-projecting but narrowing gradually towards the top, so that the impression of weight is somewhat mitigated. As supports there are on each of the four façades four strong pillars with very large cantilevers, which are carved on the under-side into cloud shapes, a motive which is especially characteristic of this period.

JAPANESE BUILDINGS AFTER T'ANG MODELS

The square rafters are very substantial, and project far by means of an ingenious construction which was no doubt developed in China before it was introduced into Japan. The principle of this system consists in the duplication of the rafters below the eaves. Instead of placing the outermost purlins directly on the cantilevers, which project from the pillars, a sort of sub-frame is made of shorter rafters, the ends of which are fastened in the roof-trusses, and on these are raised two or three struts with cushions on which the purlins rest. The actual roof rafters may thus be further



Transversal section of the Kondō of Hōryūji, Nara. Drawing by H. Moeller after plates in *Japanese Temples and their Treasures*.

extended and the roof is lifted higher over the supporting framework ; the effect becomes lighter and more airy than in buildings in which the roof rests directly on the cantilevers or the projecting roof-eaves. This system of constructional double-rafters remained in general use until the end of the Sung period and even later, although in form and arrangement the lower rafters were modified, as we shall have occasion to observe. Furthermore, we may notice that all the members are unusually strong, not to say heavy, as may be seen both in the entasis of the columns and in the heavy two-armed brackets and the cloud-shaped cantilevers. They take the place of the transverse bracket-arms, which came in general use later. The inner roof structure to which the rafters are tied consists of manifolded posts, hammer-

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beams and beams joined into a strong carrying truss for the great roof, of which the weight is thus gradually transferred to the pillars which encircle the room.

The same structural method and elements recur in the temple halls of the period, as may be observed by a closer study of Hōryūji's *kondō*, or Golden Hall, the oblong quadrangular room, with surrounding colonnades, in which the statues of the cult are placed. In the pagodas, however, a very important element is added in the great mast which rises through the whole height of the tower ; its function is not, strictly speaking, constructive ; it is not intended to support the tower, but only to carry the great spire which rises above the tower with its nine metal rings. The builders deliberately avoided tying the mast too tightly to the framework of the building but left it a certain amount of play. If the whole structure were suspended from or tied to the mast, the tower would be endangered by the inevitable swaying of the tall mast. There are isolated examples in which the mast is suspended in the beams of the tower, but in these comparatively late buildings it was probably raised a little above the ground (or else shortened) in order to avoid the still greater danger from a gradual settling of the tower, which would arise if it became completely supported by the mast. In the early pagodas, which have for long withstood all storms and earthquakes, however, the mast is a relatively free-standing post within the tower, with sufficient room for swaying so that the tower itself is not affected thereby.

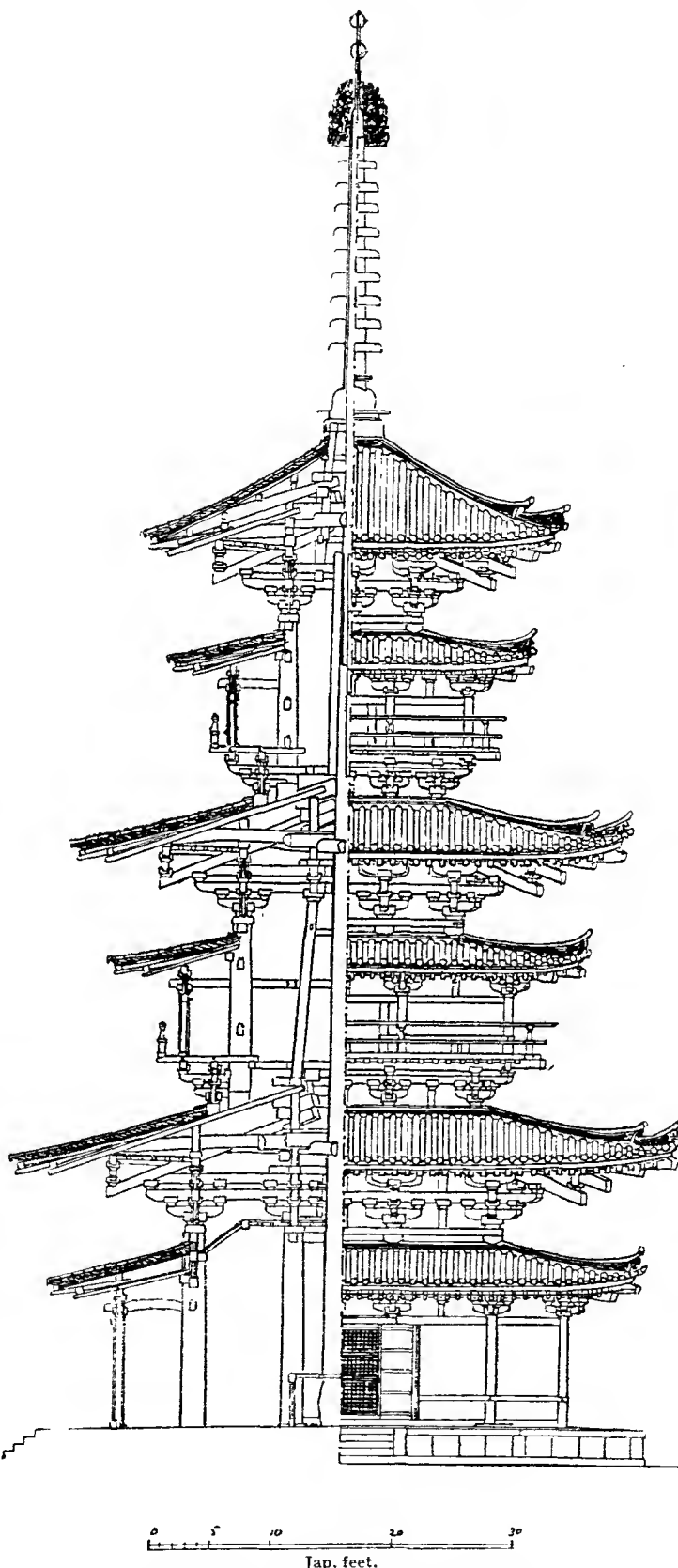
A somewhat richer division is to be seen in the pagoda at Yakushiji, which was erected at the beginning of the 8th century, probably in adherence to Chinese buildings of the beginning of the T'ang period. It is a three-storeyed tower, but each of the storeys is provided with a kind of closed balcony, borne on brackets and covered by a lean-to roof, so that at first sight the pagoda gives the impression of having six storeys. The intermediate roofs are, however, considerably smaller than those which cover the main storeys. A rhythmic variation is thus developed and the decorative effect of the tower becomes more animated than in earlier pagodas. Of great importance for the horizontal articulation are the far-projecting beams under the balconies, as also, in the main storeys, the repetition of the triple-armed brackets in double tiers. The bracketing system here attains its classical development, which consists in the use of the lower brackets as supports for the upper ones, of which the triple arms project further out and may be provided with several cushions. Their transversal arms here take the place of the cantilevers previously in use, and above them may be placed yet another tier of brackets of the same shape, as we shall see in other buildings of the same period. It should be observed that all the brackets are complete, the lower ones being so arranged that they carry both the longitudinal beams and the transversal arms of the upper brackets, whilst the arms carry the upper beams and the lower rafters. In order to strengthen the vertical construction, struts with cushions are often placed on the architrave beams in the intervals between the brackets. The under rafters are quite heavy and cut at right-angles. The upper ones are prolonged and curved up by jointing far-projecting splockets. The pillars are taller and of somewhat more slender proportions than

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in previous buildings and have a scarcely perceptible entasis and a slight taper towards the top.

The central mast of the Yakushiji pagoda reaches a height of 35 metres, including the 10-metre high spire, which carries not only the nine metal rings but also a pair of large wings in open-work, as well as two balls, of which the upper one probably symbolizes the "sacred jewel." The whole building is evidence of an artistic maturity and refinement of style, which harmonizes well with our idea of the high artistic achievement of the T'ang (i.e. Tempyō) period.

The same well-developed forms and constructive features recur at a number of contemporary temples and pagodas, which thus testify that those constructive members to which we have drawn special attention constitute important stylistic features of the period. Of the greatest interest in this connection are two large halls at Tōshōdaiji, one of the temples in the vicinity of Nara, i.e. the *kōdō* (Hall of Teaching) and the *kondō* (the Golden Hall) (Plate 110 A, B). The former originally constituted a part of the Imperial palace at Nara, but was removed to its present site when the temple was consecrated in 759. The building is extremely simple; an oblong one-storeyed hall

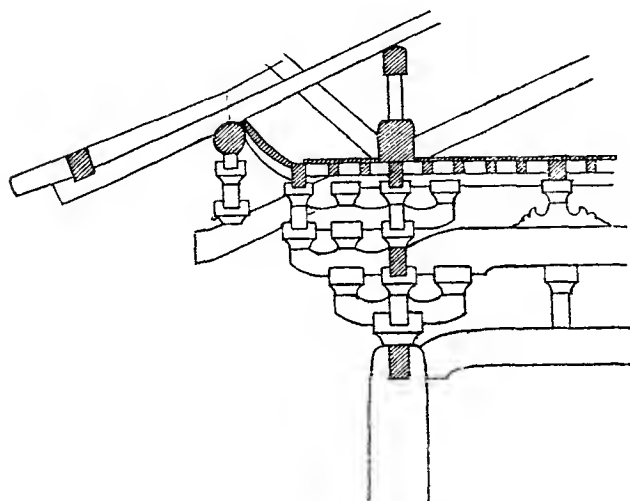


The Pagoda of Yakushiji. Drawing by H. Moeller after plates in *Japanese Temples and their Treasures*.

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with double rows of pillars on all four sides, of which the inner one is free-standing in the room, and the outer filled in to form a wall. The five central intercolumniæ are provided with doors, the remainder with lattice-work windows. The pillars are of the form indicated above, with a slight tapering towards the top. They are placed far apart and carry the lower rafters on triple-armed brackets which, however, are not duplicated. Between them are placed struts which rise from broad cushions on the architrave beams. The roof is the usual saddle roof with half-gables on the short sides.

This system of construction is still more fully developed in the kondō of Tōshōdaiji, which, with the exception of its subsequently rebuilt roof, is an unusually imposing example of the wooden architecture of the T'ang period. The elongated building stands on a comparatively broad and high stone platform, but it is provided only on the front side with an open portico. The pillars, which



The bracketing system at the Kondō of Tōshōdaiji, Nara. T'ang (Tempyō) period. After a drawing by Prof. T. Sekino.

rest on low moulded stone slabs, are in the classical form with a slight entasis and are tied together, as usual, by an architrave beam. Above this lie the square cushions from which the triple-armed brackets project. The latter carry, in accordance with the method already described, the upper longitudinal beam and the second tier of brackets. Above this follows a third tier of brackets, which is, however, completely hidden under the eaves. The under rafters run

between the longitudinal arms of the upper brackets and abut against the transversal arms of the second tier of brackets. The upper rafters are taken up by struts, which also carry the outward purlins, and in addition there are cross-braces between the upper and lower rafters in order to cover the large interval between them. The whole system is carried out with admirable logic, the manifold bracket system, which may truly be said to constitute the vital nerve of Chinese wooden architecture, is here developed in its most perfect form. The decorative elevation of the building is very successfully emphasized, whilst the structural principles are not in any way modified or disturbed.

The close relation between this remarkable building and certain Chinese prototypes is also demonstrated by the incised reproduction of a similar hall on the semi-circular stone pediment above one of the gateways to the previously mentioned Ta yen t'a pagoda at Si-an fu (Plate III). This stone engraving represents a building in contemporary style on which we may observe the same constructive details as in the kondō of Tōshōdaiji. One may particularly notice the system of triple tiers

BEAMS AND BRACKETS

of brackets on which the successive transversal arms serve to carry those placed above. It matters little that the columns have been made very thin and the roof too small. We can recognize without difficulty the vital nerve of the whole constructive system, i.e. the brackets, and below them the struts, of which the lower ones take the form of two curved legs instead of cushions, an arrangement which also can be seen at some of the façades of the T'ien-lung shan caves and on Japanese temples of various periods.

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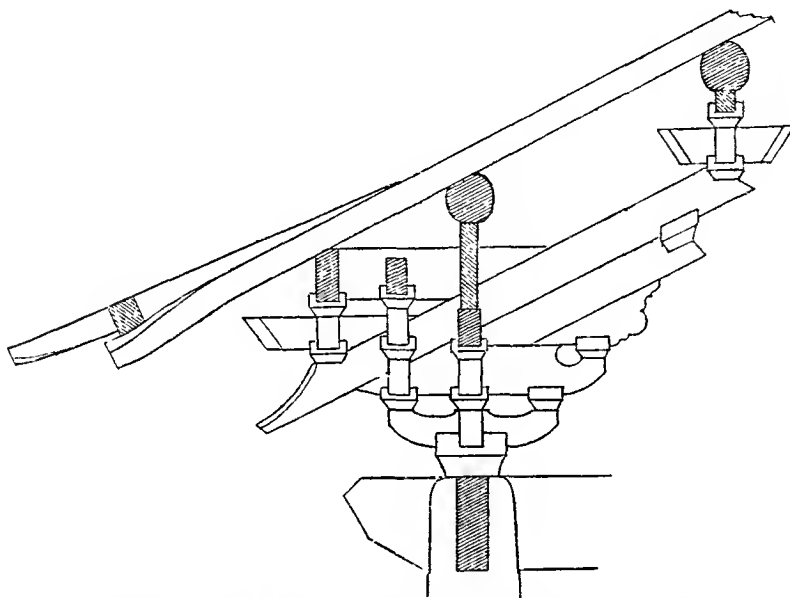
The oldest still existing wooden building in China is, as already stated, the great pagoda at Ying-chou in northern Shansi, which was founded in the year 1056, during the reign of the Liao dynasty (Cf. Plate 35). It adheres to a type which we know from a great number of brick pagodas but has a well-developed constructive framework of wooden pillars and brackets in the five successive storeys, which may be observed in our illustration. Practically the same bracketing system returns at the two almost contemporaneous temple buildings in Ta-t'ung fu, known as Hsia-hua-yin ssü and Shang-hua-yin ssü. The former (Plate 112) was founded in the year 1037, but (according to the Ta-t'ung hsien chih) destroyed by fire in 1119, when it was rebuilt, not to speak of later repairs which are recorded in the years 1140, 1335-40, 1631, 1743, etc. The latter, Shang-hua-yin ssü, was founded in the year 1062 and repaired several times in the Ming and Ch'ing dynasties (Plate 113). The main halls of these temples have, however, preserved certain essential parts of their original constructive frame, though somewhat concealed by the later repairs and additions. The walls are new and made to encase the pillars, as may be seen on the façade of Shang-hua-yin ssü, and so are all the decorative details, doors and windows, etc., but the supporting pillars, their tie-beams, the tripled brackets, the roof-beams, purlins, and rafters are old or renewed in strict accordance with their original shape and function. Most noticeable and important from a historical point of view are the very strong and heavy brackets which project from the square cushions at the top of the pillars. They are, as usual, three-armed and firmly tied together, the upper ones being supported by the transversal arms of the lower ones, whereas the longitudinal arms carry the three successive eave-beams. The uppermost of these serve as a strong purlin for the far-projecting rafters, which are laid in double layers, the lower ones being round, the upper ones square. The bracketing system is characterized by a remarkable compactness and solidity; it is not quite as free and elastic as the corresponding parts on the buildings of the T'ang period, yet more closely related to these than to the kind of brackets that may be seen on later buildings.

The interiors of these temples have been more or less modified by later restorations and rebuildings. This is particularly true of Shang-hua-yin ssü, the big hall of which has become a magnificently decorated room of the Ming period with a great number of gilt statues of the same age (Plate 114 A). In Hsia-hua-yin ssü the further portion of the hall is old, the tripled brackets which support the ceiling have retained

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their original form, and the numerous big statues which are arranged in three groups on the platform, which fills practically the whole room, are probably not later than the 12th century (Plate 114 B). They are modelled in mud and coated with lacquer and gold (which has darkened), forming an *ensemble* which hardly is surpassed by any other temple interior with sculptures in China.

Somewhat later in date but practically unmodified by restorations are the early buildings at Shao-lin ssü, the famous monastery on the slope of Sung shan in Honan, where the founder of Dhyāna (*Zen*) Buddhism, known as Bodhidharma, is said to have remained several years. The meditation hall—Ch'u-tzū an—of this monastery (Plate 115) bears an inscription of the year 1125, and the Bell Tower was erected at



The bracketing system on Ch'u-tzū an, Shao-lin ssü. Sung period.
After a drawing by Prof. T. Sekino.

the end of the 13th century. The Ch'u-tzū an is quite a small building, measuring only about 11 metres on each side, standing, as usual, on a stone terrace. Each side has four hexagonal stone pillars, but only those of the façade are visible, the others being embedded in the brickwork of the walls. In the interior are, furthermore, one pair of larger and one pair of smaller stone pillars, decorated with Buddhist reliefs, and the doorway is framed by carved

stone-beams. Thanks to these solid stone supports the building has been preserved, but the roof, which is made of wood, threatens to fall in, if it has not already done so. The brackets under the eaves are doubled and emerge not only from the pillars but also between these from the beam, which tie these vertical supports. They are thus brought more closely together than on previous examples, suggesting almost a continuous cornice. Furthermore, it should be noticed that the brackets of the upper row have no transversal arms but instead of that are cut through by a kind of pointed under rafters, which act as levers for the roof-beams as they are tied to these at their further end by means of struts.

By this change the harmony of the original bracketing system, as seen on earlier buildings, was to some extent impaired, but an effective means was at the same time created for lifting the far-projecting roof. As long as these cross-pieces are used as levers for the roof-beams or purlins, they are, indeed, constructively most effective,

CONSTRUCTION IN THE SUNG PERIOD

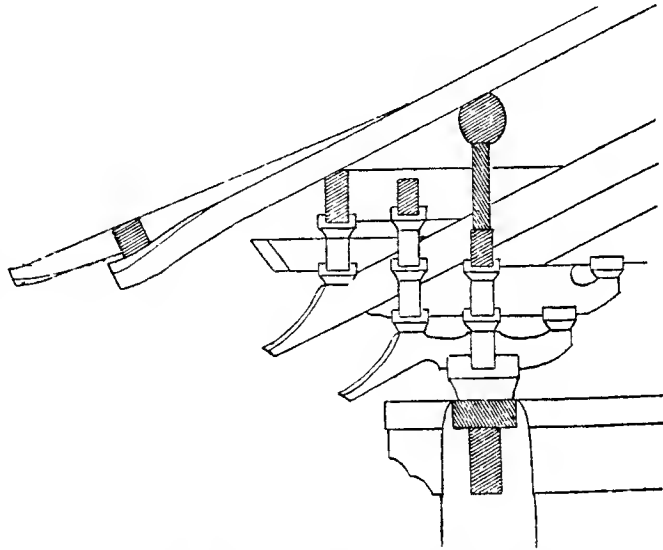
but gradually they become simply sloping pieces of wood which are cut like beaks at the end, and often multiplied in several tiers.

On the buildings of the Sung and the Yüan periods these beak-like transversal pieces are still constructive and employed more or less as levers for the roof, whereas the longitudinal arms of the brackets support the successive beams under the eaves, which form a kind of cornice. This may be observed, for instance, on the Bell-tower of Shao-lin ssü (Plate 116), where the upper storeys have no less than four tiers of gradually-projecting brackets with pointed beaks. In other buildings of the same period, such as one of the pavilions at the Confucius temple at Ch'ü fu, several of these transversal pieces are joined together into a kind of strong lever or bed for the purlins of the roof.

Buildings in China dating from the Sung and Yüan dynasties are, indeed, very scarce (except brick pagodas), but our knowledge of the architecture of these times may be supplemented by observations on some buildings in Japan, which were erected in the 12th and 13th centuries after Chinese models. Most interesting in this connection is the so-called *Shariden* (Ch'u-tzü an) at the famous Zen temple, Engakuji, in Kamakura.

It is a small rectangular building, like the corresponding hall at Shao-lin ssü, but has an uncommonly high roof, covered by straw, and is surrounded by a lower gallery. The brackets are practically of the same type as on the Ch'ut-tzü an and placed so closely together that they form a kind of "roof beard," if we may so call this abundance of pointed and slanting cross-pieces. The purely Chinese character of this building is confirmed by a comparison with some illustrations in the *Ying Tsao Fa Shih*, the architectural treatise of the Sung period previously mentioned. On the buildings reproduced in this book we find the upper brackets furnished with beak-like cross-pieces or levers, though their significance is partly obscured by the addition of some larger transversal beams, which probably have their origin in the imagination of the draughtsman.

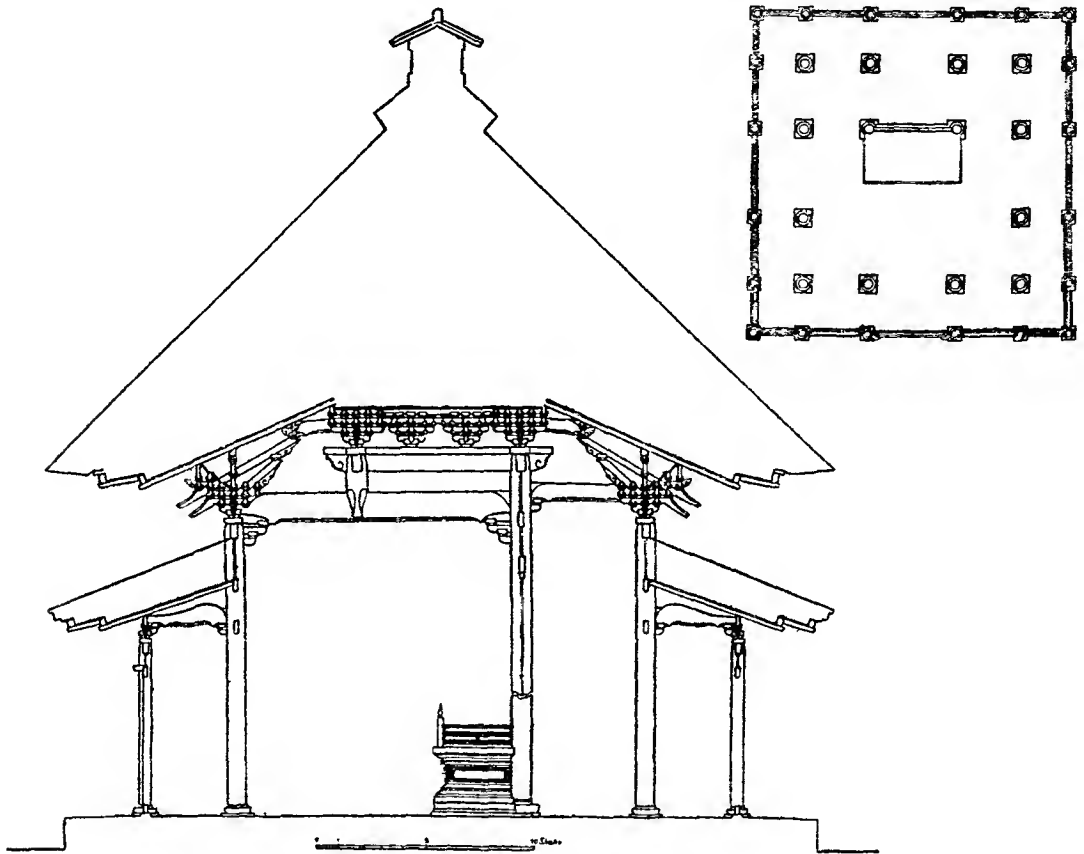
The Japanese call this constructive system, which they considered as being imported from northern China, "karayo," while another somewhat different method was called "tenjiku," because it was thought to be of Indian origin and imported from south China. This latter system of construction was principally used in large temples and gates, to which it was desired to give a particularly imposing appearance



The bracketing system on the Bell Tower at Shao-lin ssü.
Yuan period. After a drawing by Prof. T. Sekino.

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by developing the upper portions into an overwhelming crown for the building. The most important elements for achieving this effect were, of course, the brackets, which became multiplied and at the same time transformed into a series of stepwise projecting arms. They are no longer two- or three-armed, but consist of only one arm, a cantilever, projecting straight from the vertical posts. A fine example of the "tenjiku" style is the great Nandaimon gate at Tōdaiji (Nara), which was erected in 1199 (Plate 117). It has five spans of columns on the long sides and a roof in two



Plan and elevation of Shariden at Engakuji, Kamakura. Drawings by H. Moeller after plates in *Japanese Temples and their Treasures*.

storeys, of which the lower one is supported by seven tiers and the upper one by six tiers of cantilevers projecting from each column. Most of these arms are structurally of no importance, i.e. they are simply jointed into the vertical posts, but some of them (three under the lower roof, two under the upper) consist of the projecting ends of the continuous beams, which are shaped into the form of straight brackets or cantilevers. These beams tie the framework together, and carry the roof in the same natural manner as is also adopted in some other countries, like Switzerland and Scandinavia, where old traditions of building in wood still prevail.

The "tenjiku" system seems, however, never to have won much popularity in northern China. It was both costly and inconvenient owing to its many loosely-

CONSTRUCTION IN THE MING PERIOD

jointed parts, and it did not express any new constructive idea. Projecting roof-beams have, indeed, been used in all ages to carry the wide eaves, but so far as we are aware, they have not been manifolded to the same extent in other countries, or developed by the insertion of intermediate pieces to a kind of large brackets. This is a Chinese idea directly resulting from the immense projection of the roof.

The successive changes in the shape and joining of the brackets tended on the whole to weaken rather than to strengthen the construction. They were multiplied in every direction and made into long series of curving arms and closely joined groups, suggesting a "roof beard," but their carrying strength was thereby by no means increased, because the individual parts became more slender, and some of them gradually lost their tectonic function. This can be followed in many buildings of the Ming and later times, altogether too numerous to be described here. The building activity during the Ming dynasty was, indeed, very intense; it reflects the new influx of national energy and creative activity which are characteristic of the whole epoch. But all this new activity in the field of architecture did not mean any real progress; the buildings were, as we have pointed out repeatedly, erected in accordance with the traditional shapes and styles, and the modifications in the constructive parts, such as the pillars, eave-beams, brackets, and roofs, tended to enhance the decorative appearance rather than the structural importance of the buildings.

Our illustrations to the previous chapters include a great number of characteristic Ming buildings, and we will add here only two or three examples, which may be of particular interest from the point of view of construction. The earliest ones, those which were erected at the very beginning of the Ming period, contain still a bracketing system after the fashion of the Sung and Yüan buildings, as may be seen on some of the big halls of the Ta-fo ssü in Cheng-ting fu, which, in spite of many rebuildings, retain some of the characteristics of the Sung period (when they first were erected). Our photograph of one of the interiors at this temple (Plate 118 B) shows a remarkably well-developed system of brackets which still has a great structural value, though the brackets are almost excessively multiplied. Another early Ming building is the tower on the East gate in Ta-t'ung fu, erected 1371, and now badly ruined, where the multiplied brackets also are used in a strictly tectonic fashion, though comparatively thin and slender (Plate 118 A). As the lower roofs have fallen down from this tower, the constructive framework stands out quite naked, and one may well observe here the daring methods and stupendous skill developed during a long tradition of pure wood construction in China. A better preserved example of about the same period is the Drum-tower in Si-an fu, probably erected during the reign of the first Ming emperor (Plate 119). The lower storey of this pavilion has a double row of brackets, not unlike those which may be seen on the Yüan buildings mentioned above, but strengthened by transversal beams which project through the upper brackets and help to carry the eave-beams. The construction is very effective and solid but it is no longer of the same pure and free kind as we have seen on the buildings of the T'ang and Sung periods.

EARLY CHINESE ART

The question how long a real constructive bracketing system remained in use in China is difficult to answer without more detailed investigations than have hitherto been made. It is, however, evident that already during the Ming period simpler methods were applied, as may be seen, for instance, on the earliest buildings in the Forbidden City in Peking (Plate 120). It is true that the outer appearance was kept up by fixing multiple rows of brackets and pointed beaks below the eaves, but these have no real constructive function. The purlins rest on projecting beams or on struts standing on the pillars. The closely arranged and freely multiplied brackets and beaks which we find on the big palace halls and gate-towers in Peking are nothing but an ornamental "eave-beard," decoratively effective, but without structural importance. The roof would, indeed, rest just as well on the building, even if these sham brackets were taken away.

Thus, in fact, some of the essentials of the old Chinese art of building were abandoned or transformed into parts which no longer have any constructional motivation, but rather serve to conceal the real construction. Outwardly the architectural forms are the same as before, but they have lost much of their significance and become a kind of phraseology which sounds hollow, because it lacks inner necessity. The particular character and significance of the old Chinese architecture depended primarily on its clear and ingenious wood construction. It was pure carpenters' art determined by the special requirements of the material. Each part had a definite function which was not concealed by any superimposed decoration. In short, this architecture was logical and purposeful, and it remained a living art as long as the original principles of construction were maintained. But once these were encroached upon by purely decorative tendencies, its vital nerve was severed, and its further possibilities of growth were destroyed.

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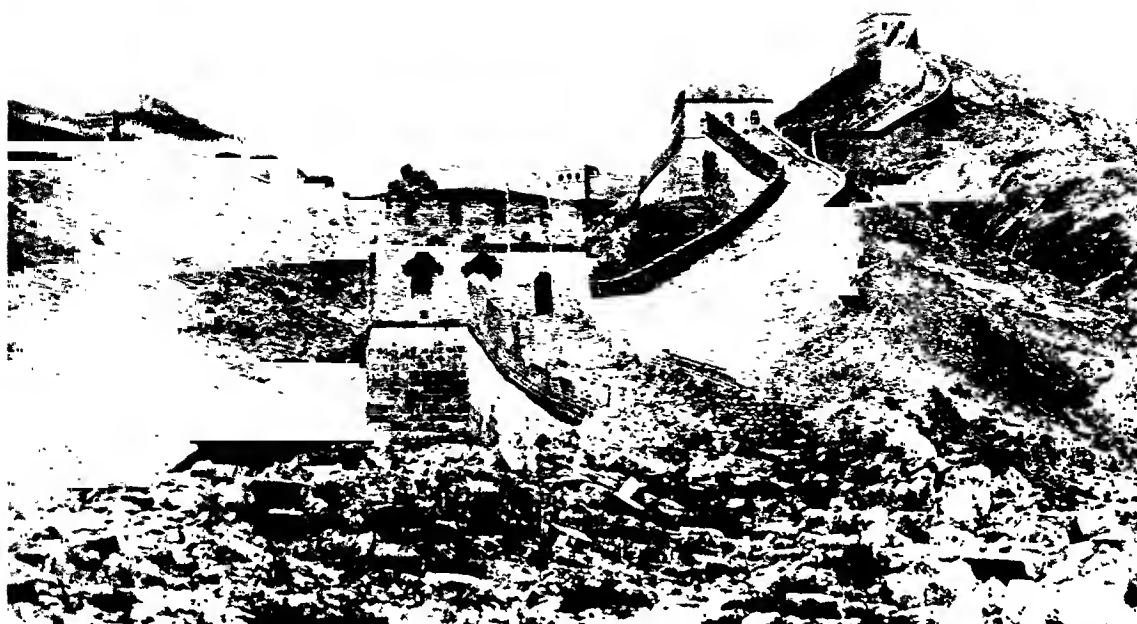
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PLATES

PLATE 1

A, B. Two views of the Great Wall near the
Nank'ou Pass.

Phot. Hartung.



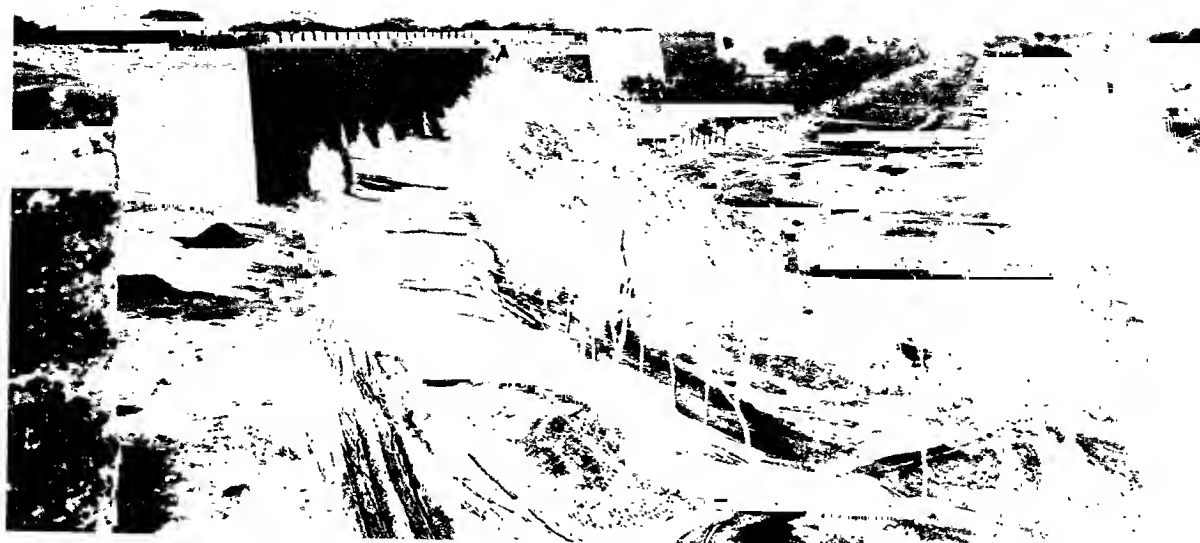
A



B

PLATE 2

- A. Outside view of the wall of the Tartar City at
Peking, East side. *Phot. O.S.*
- B. Outside view of the wall around the Chinese
City at Peking, from Chang-i mén. *Phot. O.S.*



A



B

PLATE 3

A. Outside view of the East wall of Si-an fu,
Shensi.

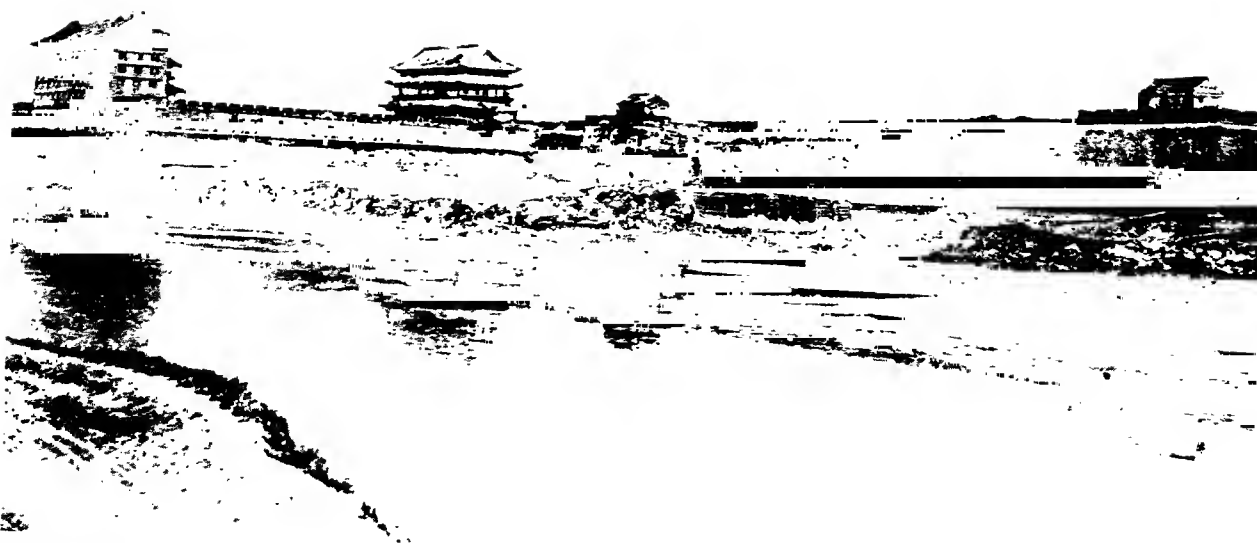
Phot. O.S.

B. Outside view of the Western gate and wall of
Si-an fu.

Phot. O.S.



A



B

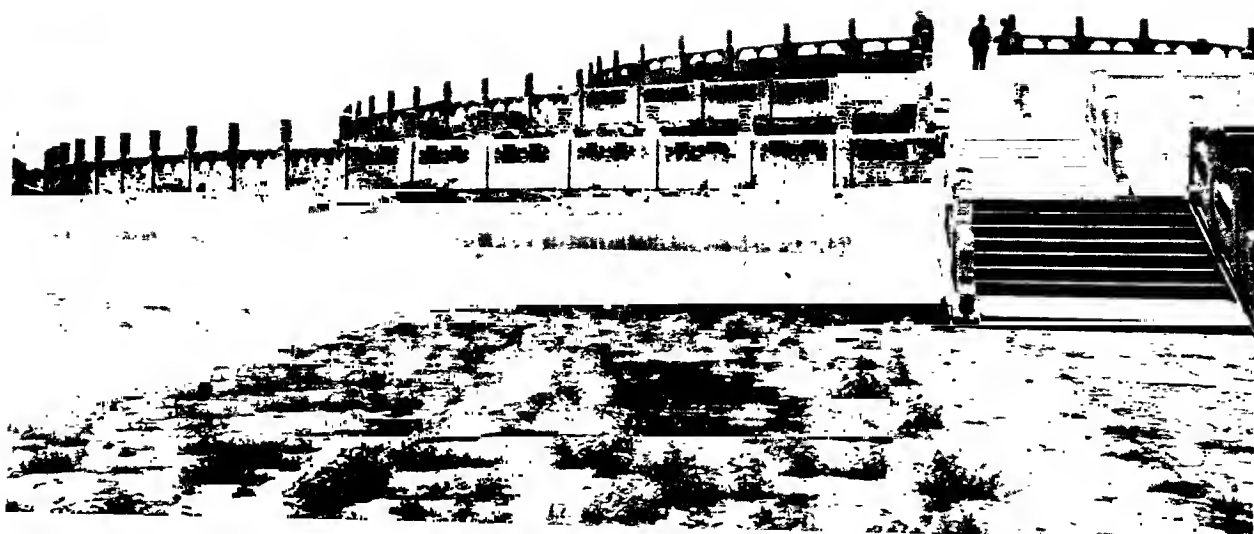
PLATE 4

A. The Altar of Heaven.

Phot. O.S.

B. The Altar of the Earth.

Phot. O.S.



A

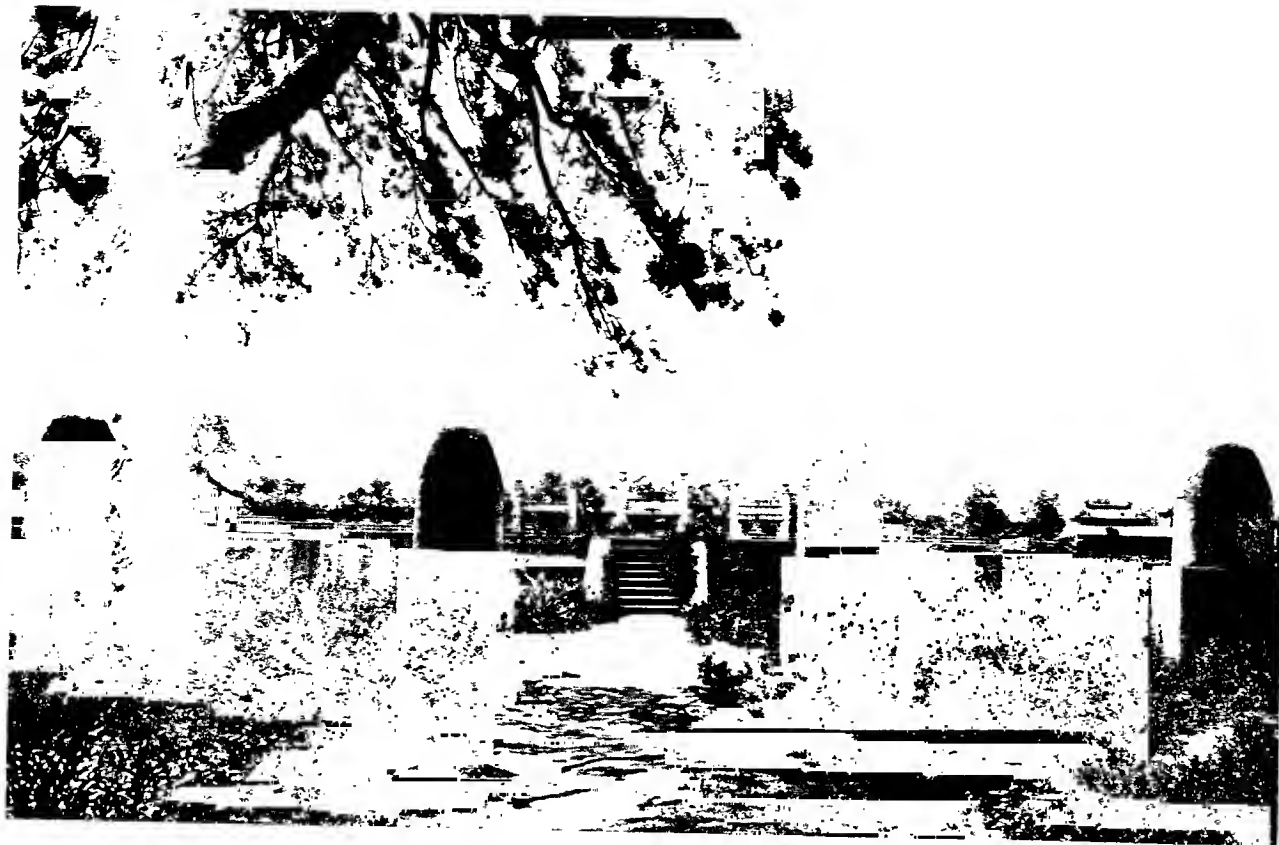


B

PLATE 5

A. T'ien-shen t'an at the Altar of Agriculture.
Phot. O.S.

B. Shan-ch'un t'an at the Altar of Agriculture.
Phot. O.S.



A



B

PLATE 6

- A. The Altar of the Moon (Hsi-yueh t'an).
Phot. O.S.
- B. The Altar of Sericulture (Hsien-ts'an t'an).
Phot. O.S.



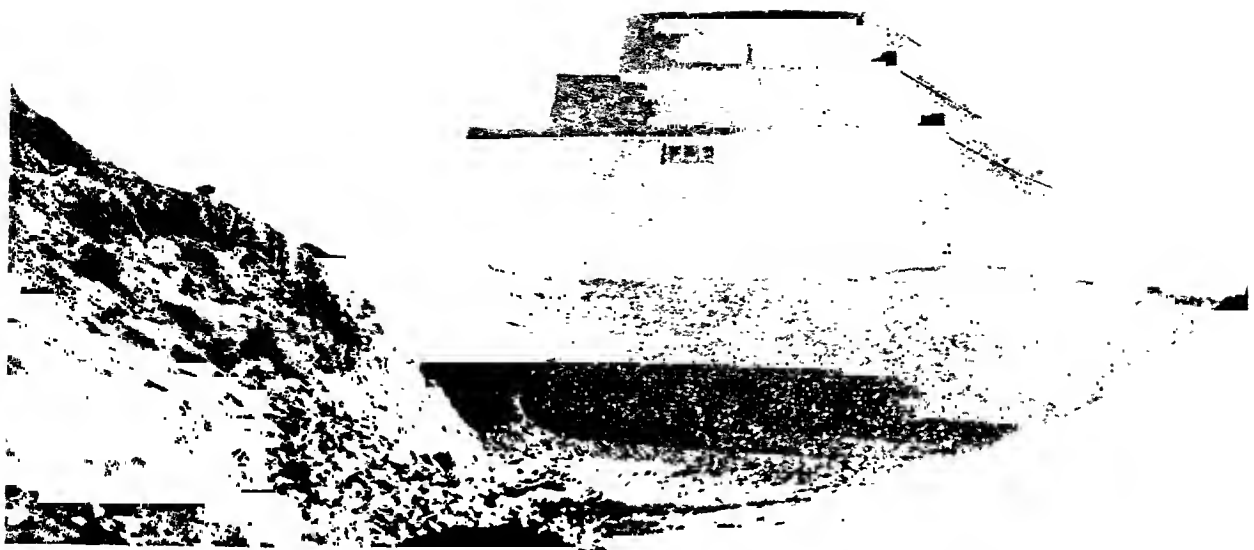
PLATE 7

A. Terraced fort on the Great Wall at Yu-lin
fu, Shensi.

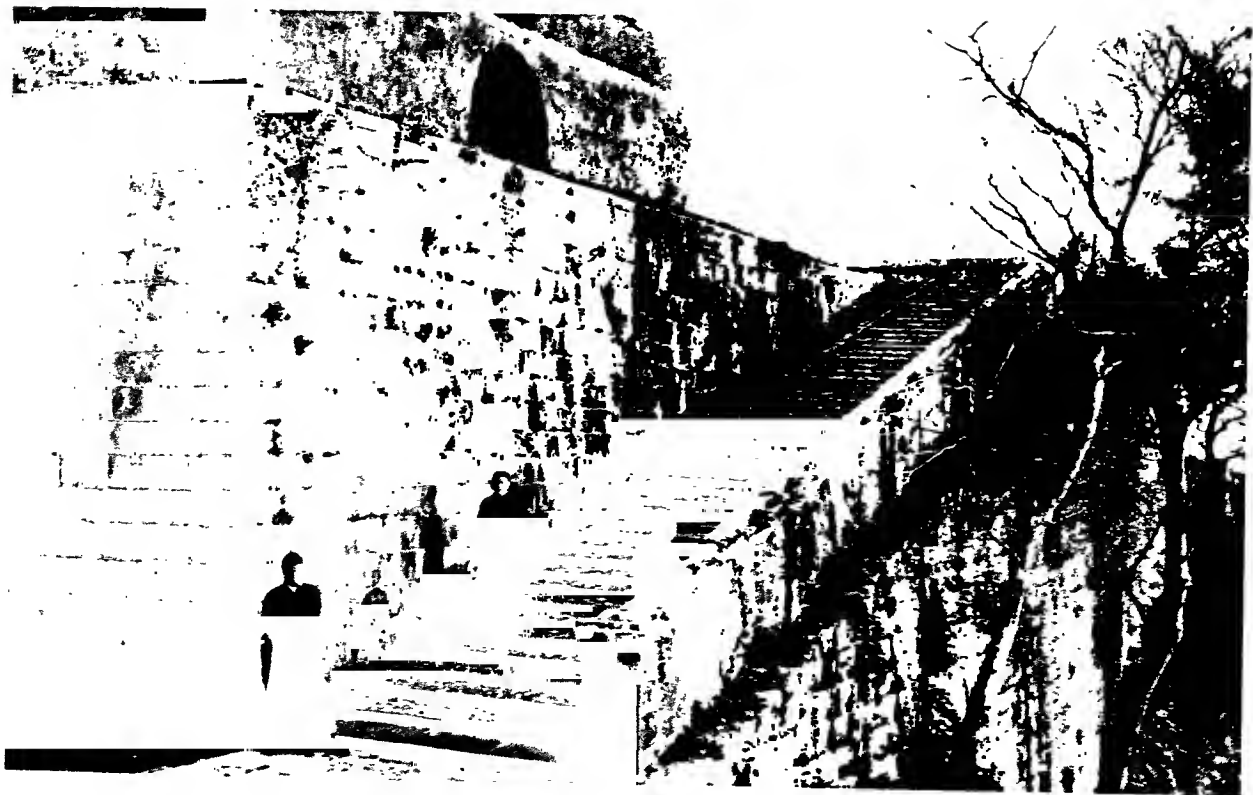
Phot. Karlbeck.

B. The Terrace of Emperor Hung Wu's tomb
at Nanking.

Phot. Fong.



A



B

PLATE 8

- A. The Terrace and Façade of Wen-hua tien
in the Forbidden City, Peking. *Phot. O.S.*
- B. Portion of Tao-wang tien at Chu-yang hsien.
Phot. O.S.

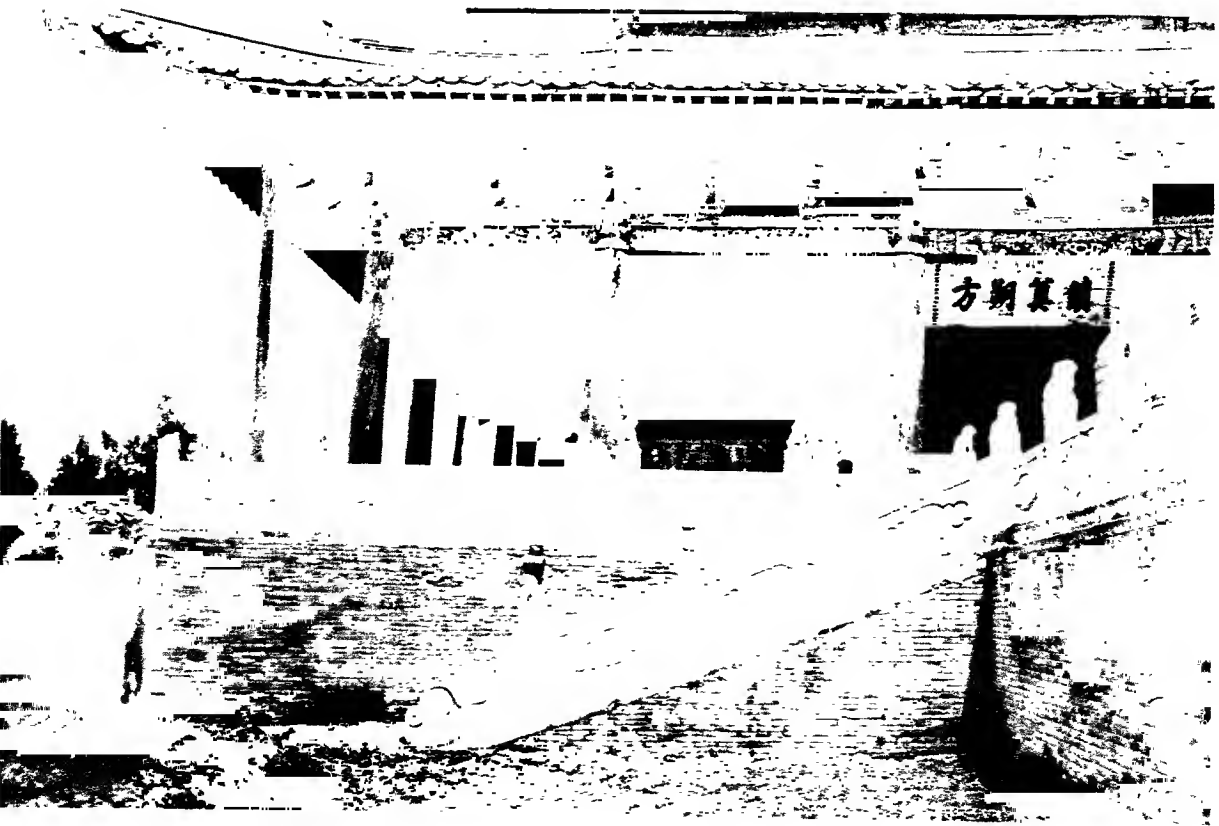
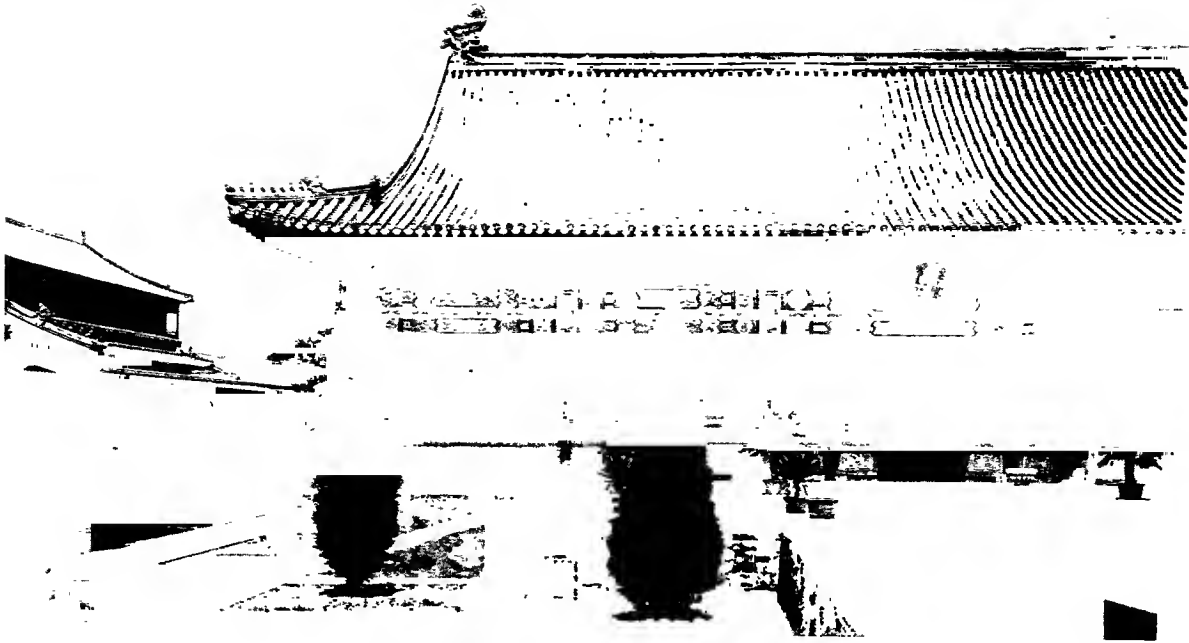


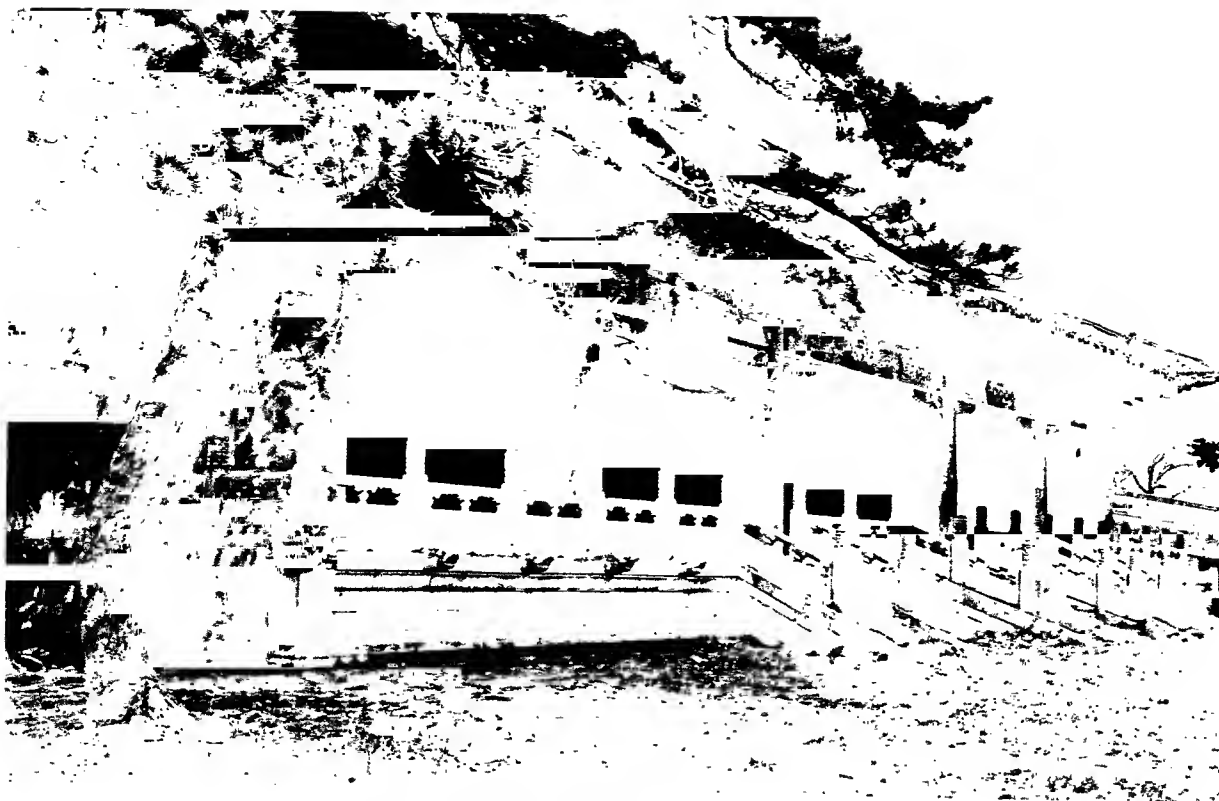
PLATE 9

A. The Entrance Hall at Emperor Yung Lo's
Tomb.

Phot. O.S.

B. Balustraded terrace at the Altar of Heaven.

Phot. O.S.



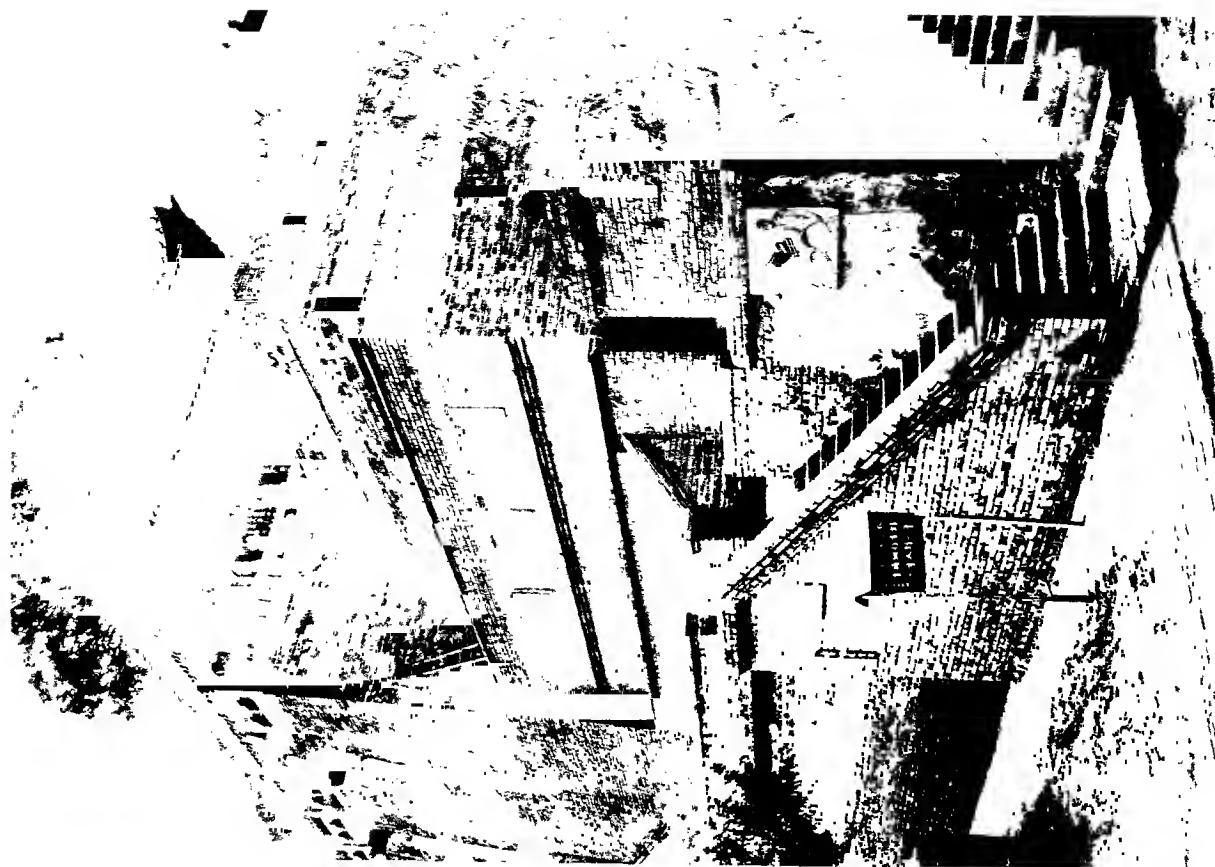
A



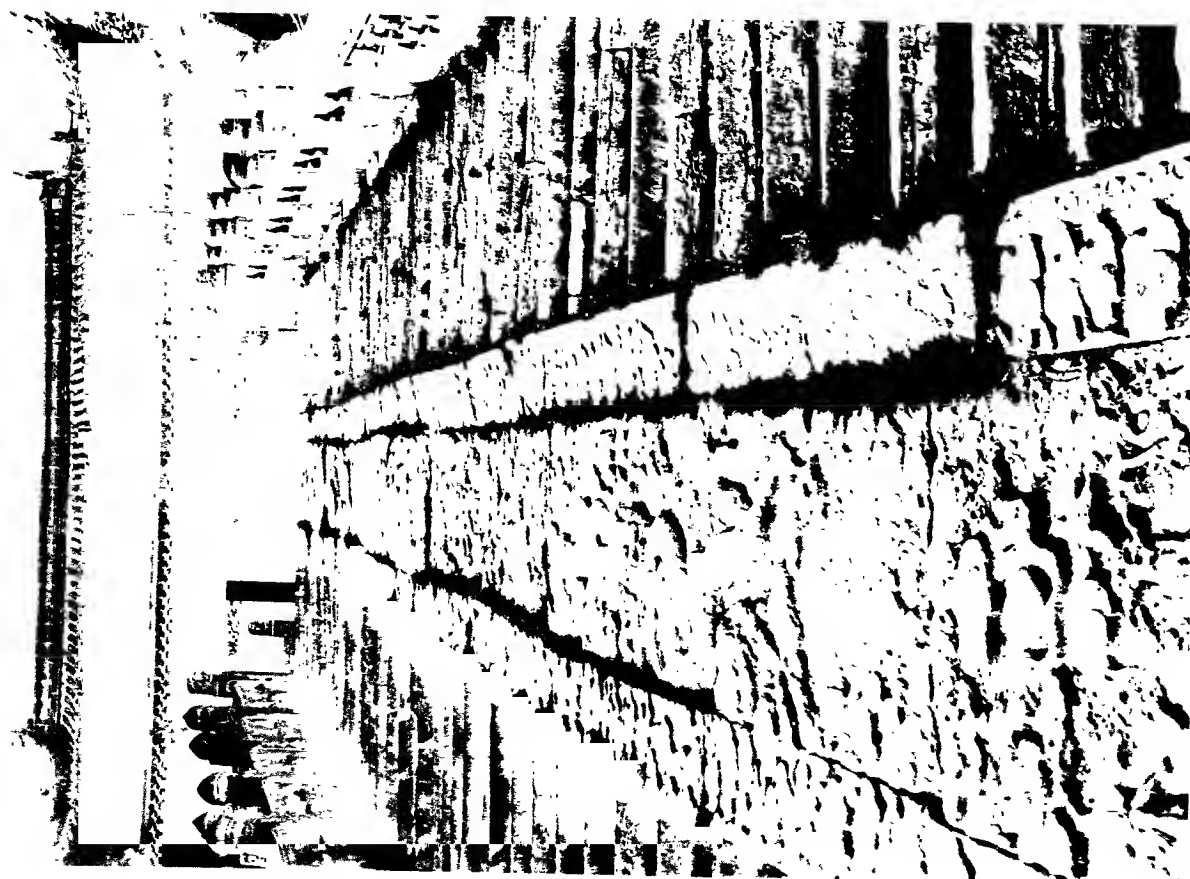
B

PLATE 10

- A. The Terrace of Lung t'ing at K'ai-fêng.
Phot. O.S.
- B. The Stairway leading up to the Lung t'ing,
K'ai-fêng.
Phot. O.S.



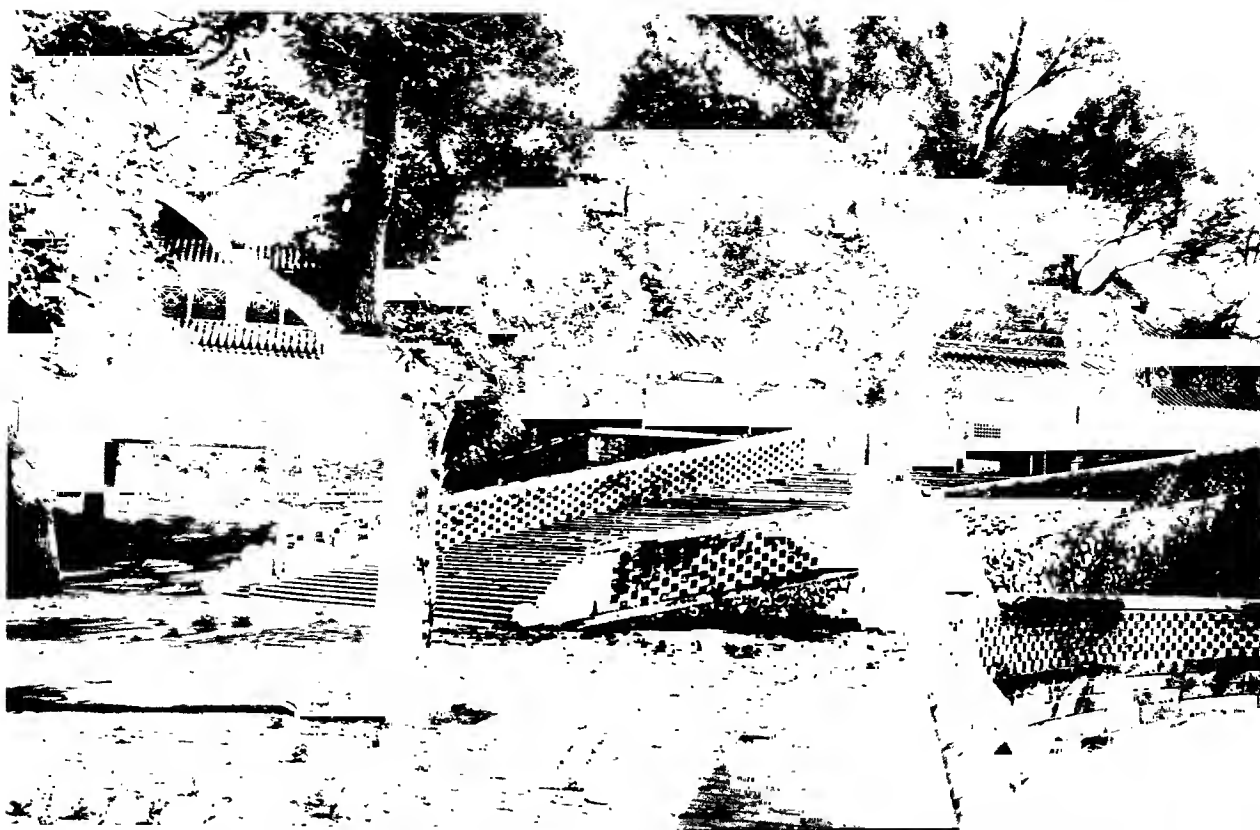
A



B

PLATE 11

- A. The Stairway and Terrace at Ying t'ai in
Nan hai, Peking. *Phot. O.S.*
- B. Stairways leading up to the Terrace of
Chung-hsiao lou in Pei hai, Peking. *Phot. O.S.*



2



B

PLATE 12

The long flights of steps leading up to the White
Pagoda in Pei hai.

Phot. O.S.

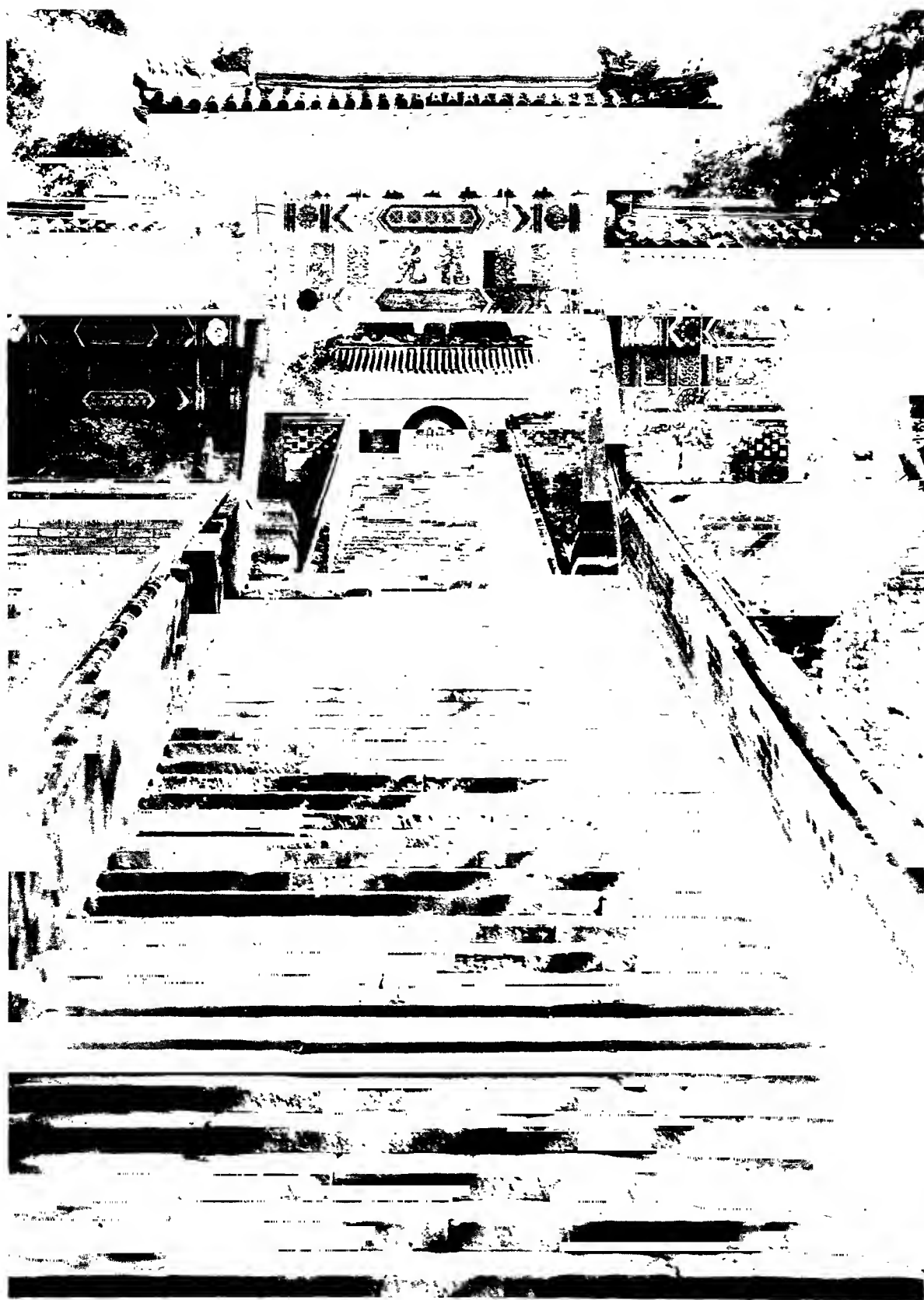


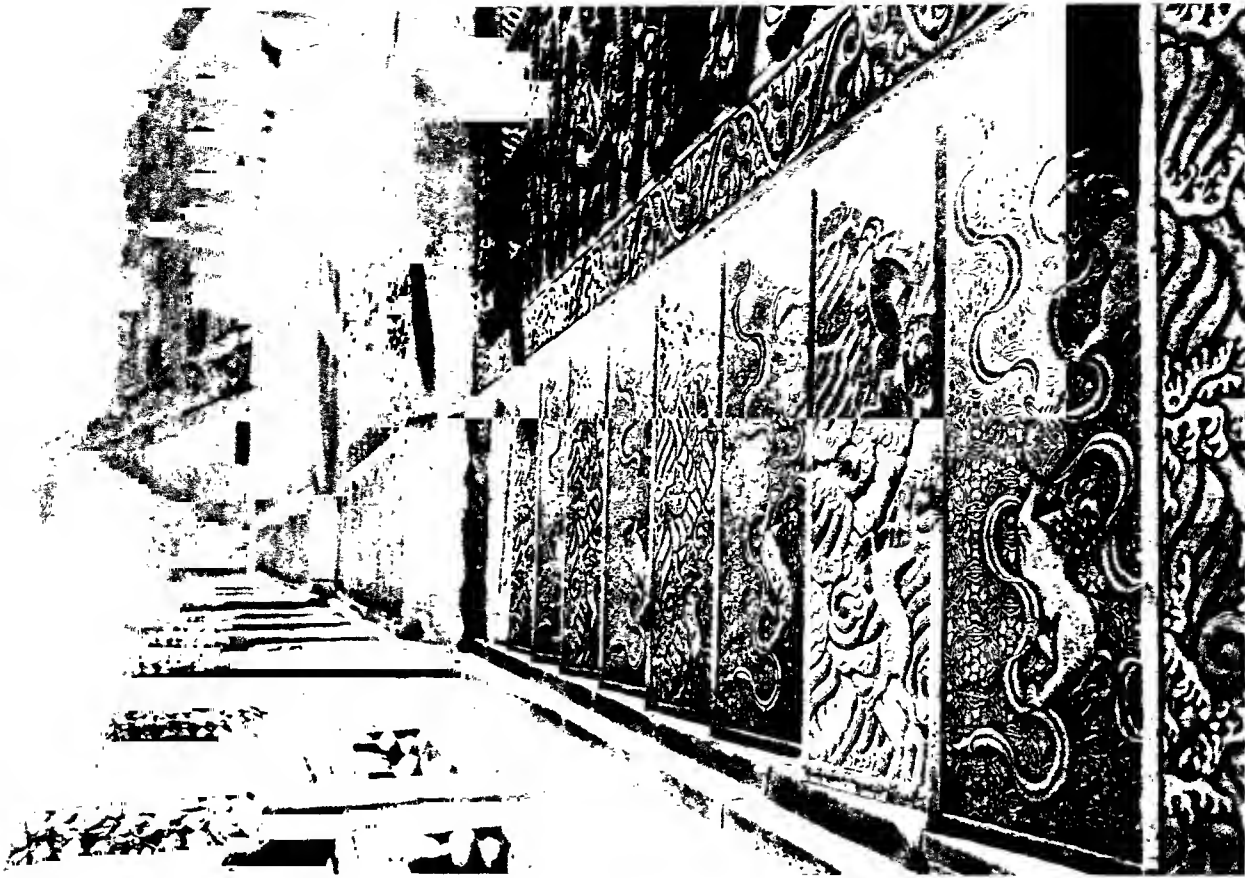
PLATE 13

A. Stepped ramp leading up to the Terrace
of Wu mén, Forbidden City.

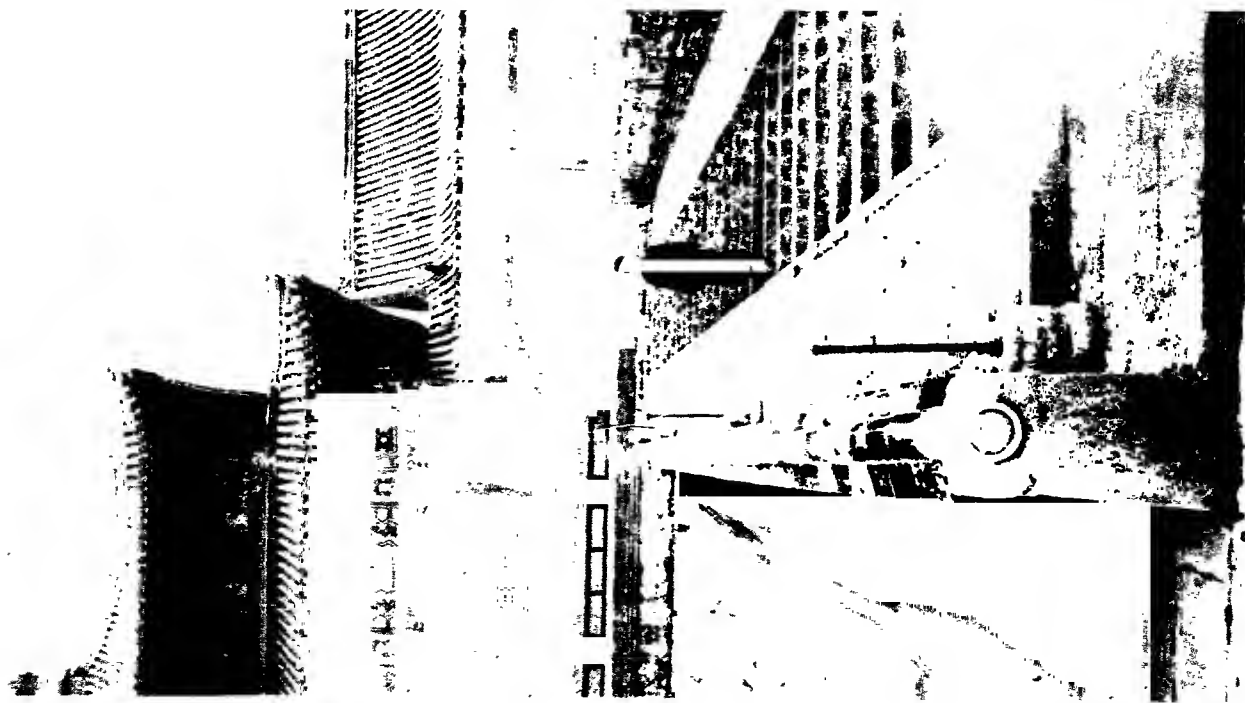
Phot. O.S.

B. Portion of the middle stairway in front of
T'ai-ho tien.

Phot. O.S.



B



A

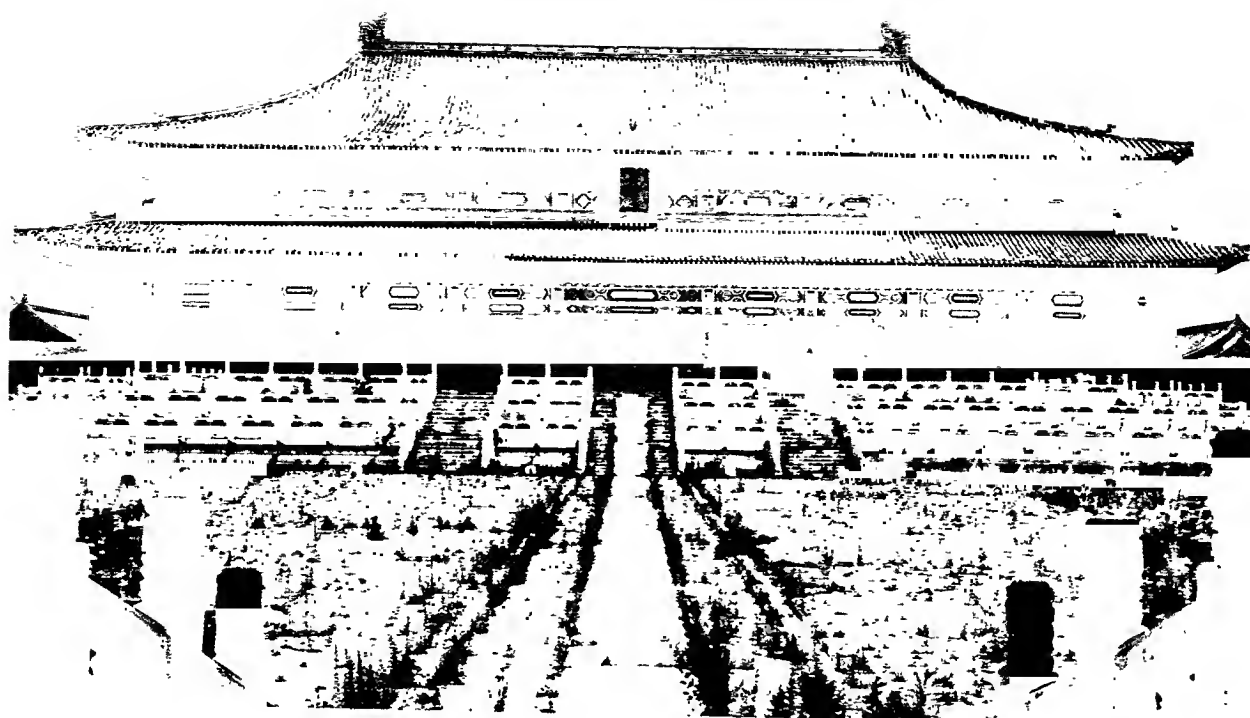
PLATE 14

A. Front view of the main hall of Tai miao,
Forbidden City, Peking.

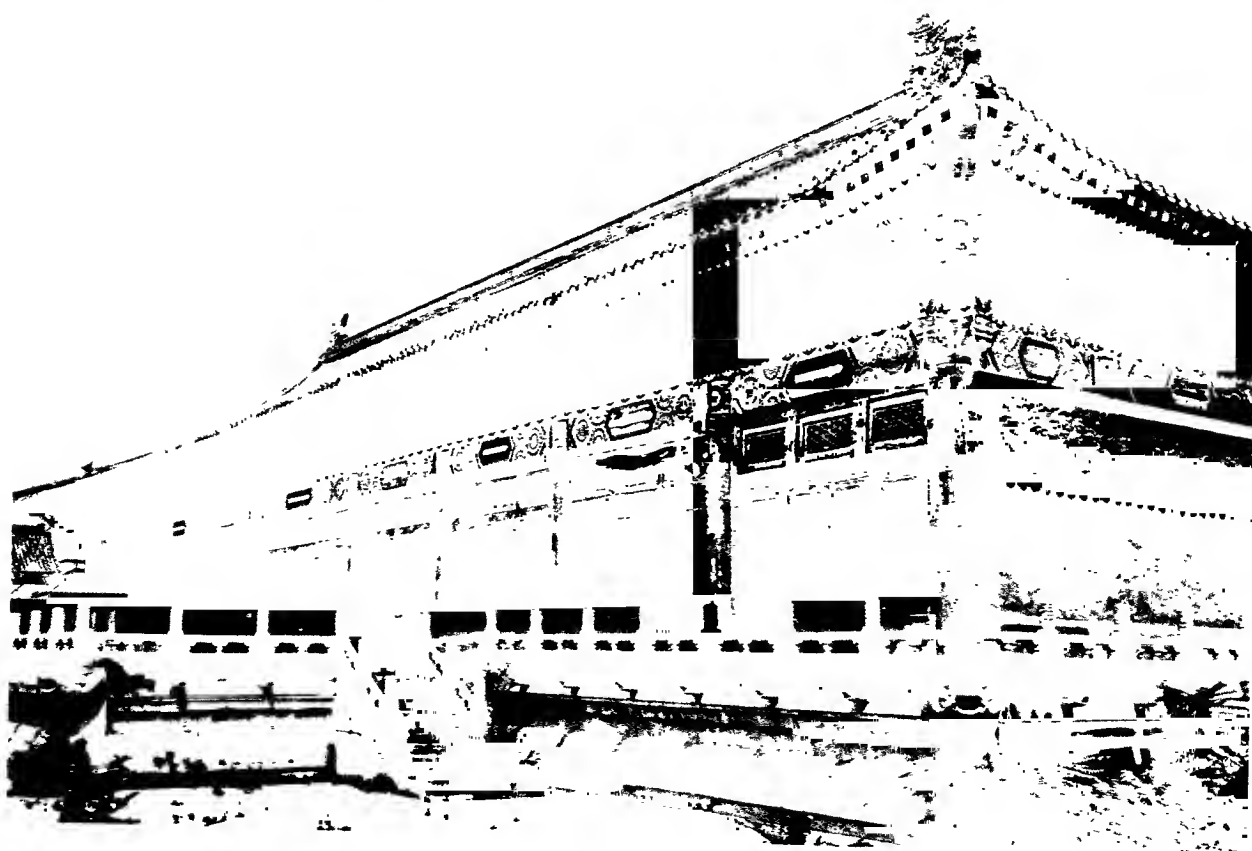
Phot. O.S.

B. Back view of the same building.

Phot. O.S.



A



B

PLATE 15

Wu t'ai ssü, Si-an fu, Shensi.

Phot. O.S.



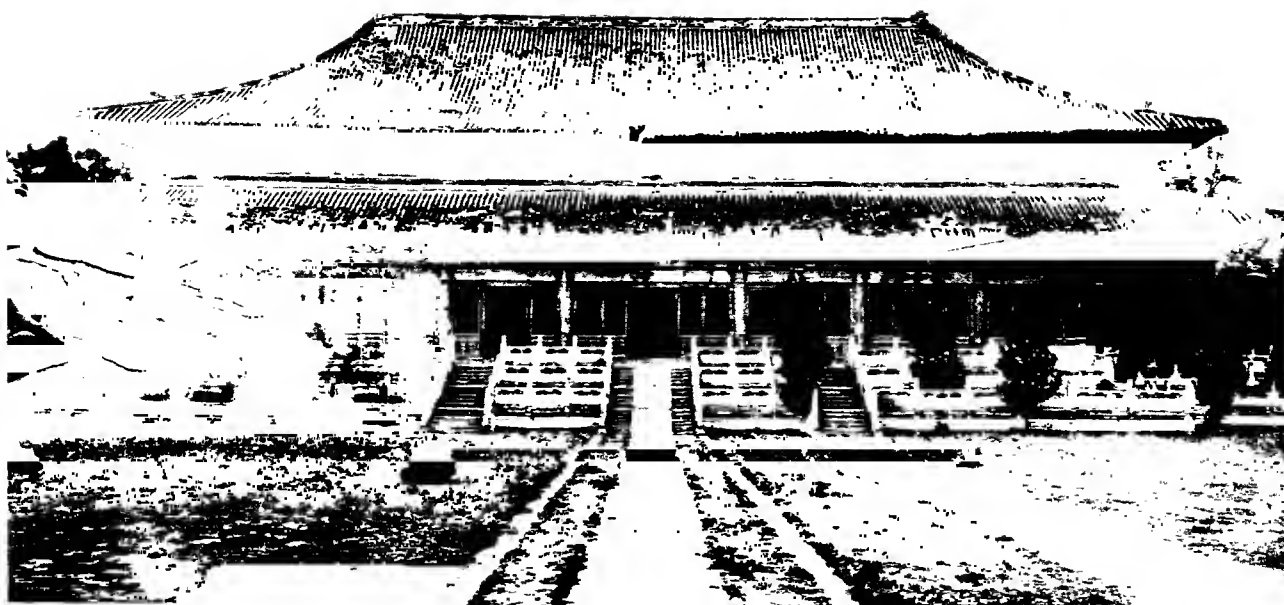
PLATE 16

A. The main pavilion at Emperor Yung Lo's
tomb.

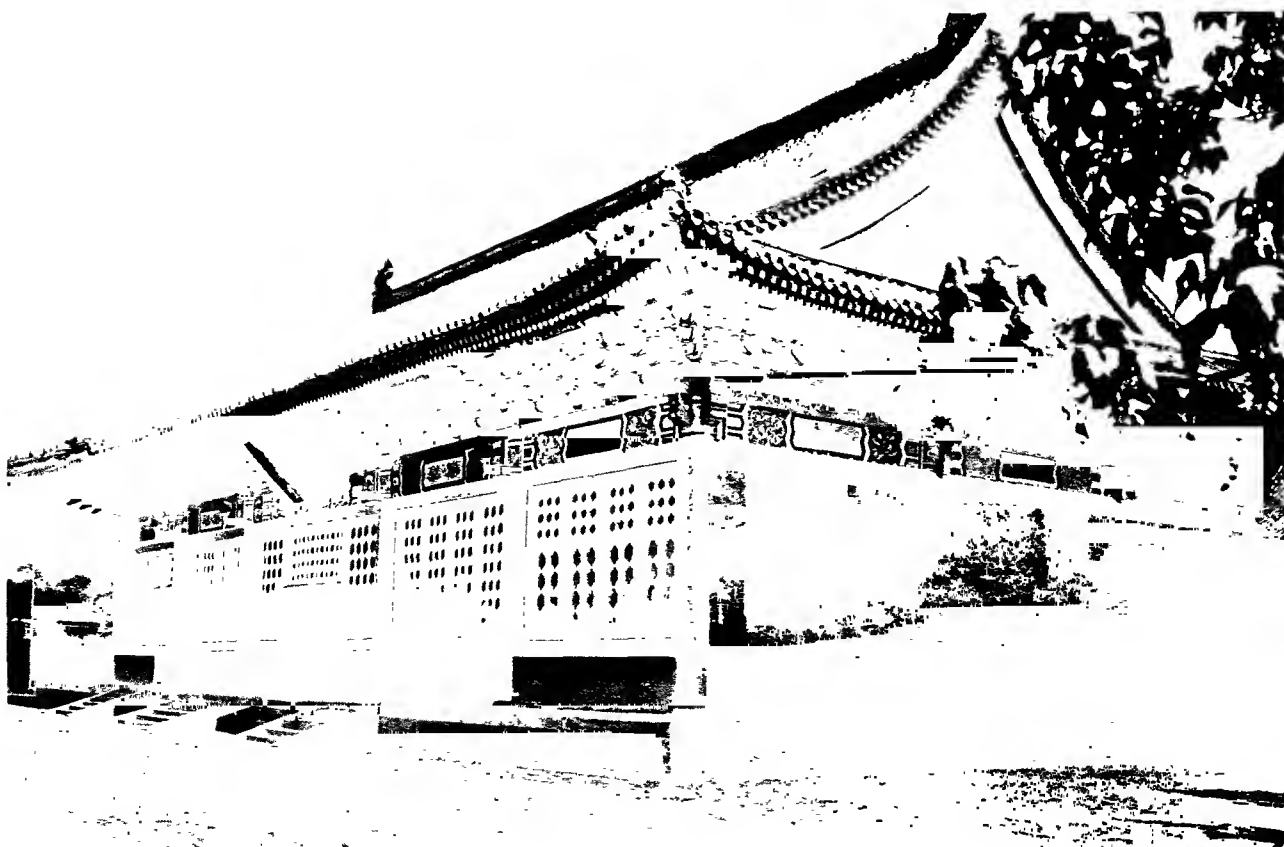
Phot. O.S.

B. The newly restored temple pavilion at
Shih-chi t'an, Central Park, Peking.

Phot. O.S.



A



B

PLATE 17

- A. Yuan miao kuan, Su-chou fu, Kiangsu.
Phot. Prof. Boerschmann.
- B. The Confucius Temple at Li-ling hsien,
Hunan.
Phot. Prof. Boerschmann.

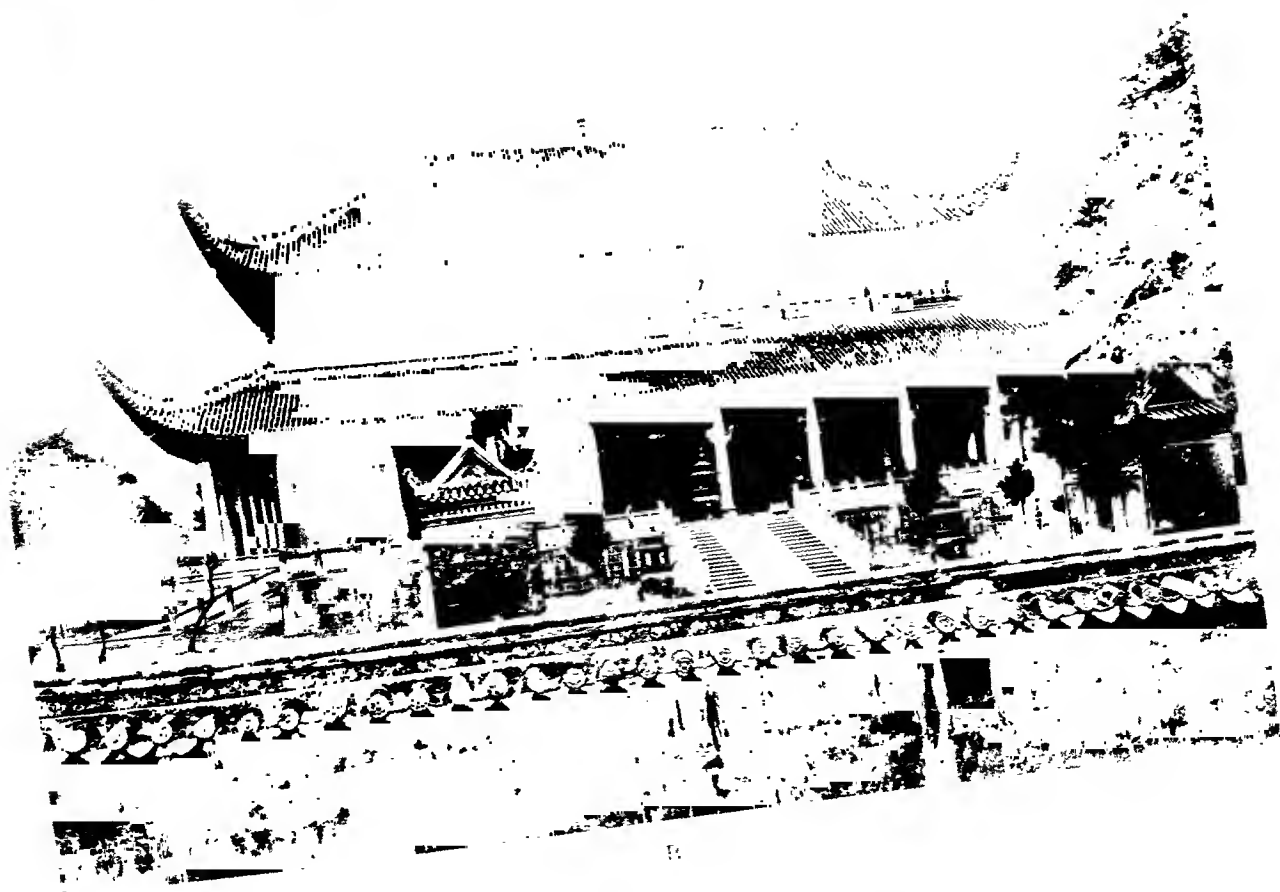
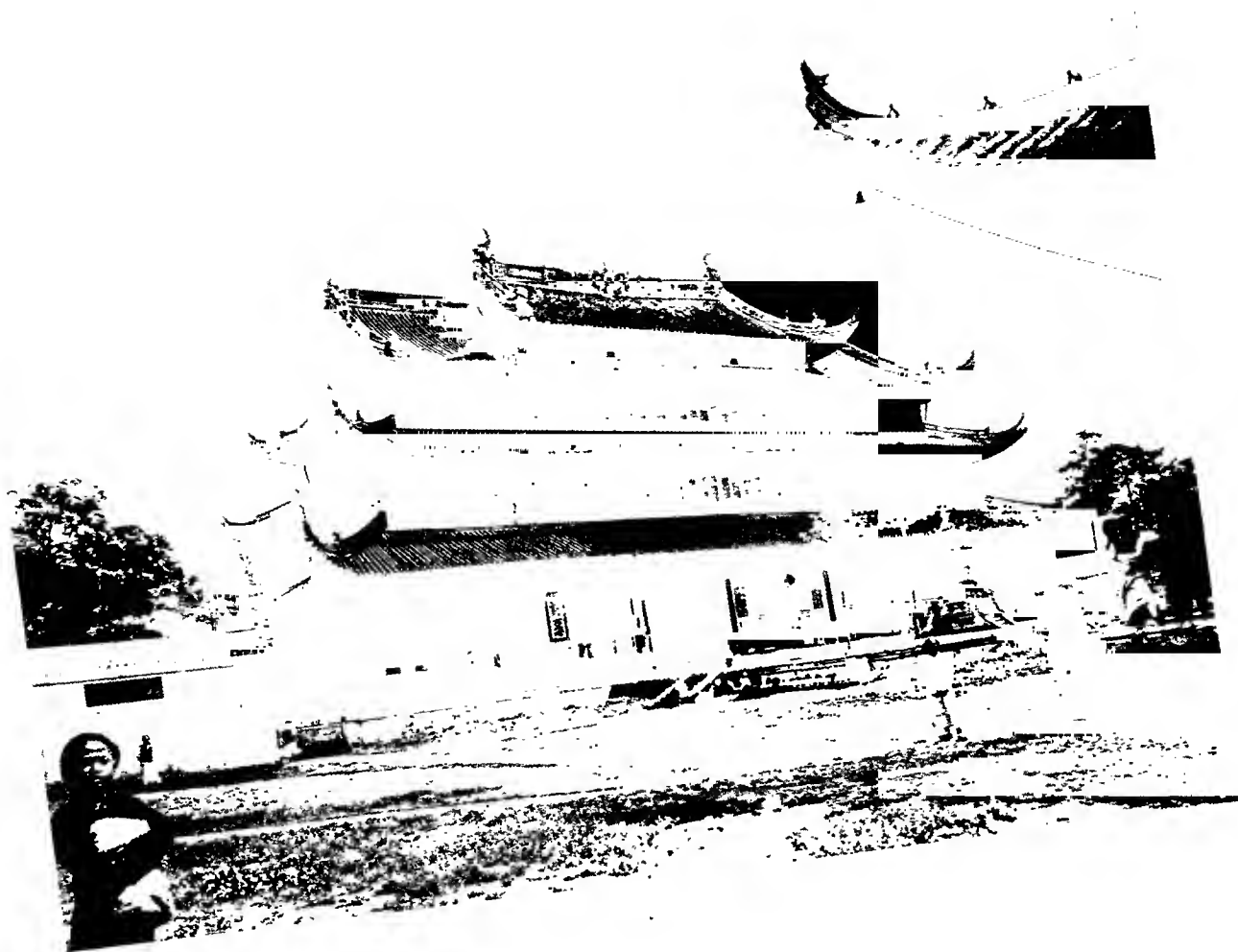


PLATE 18

A. Temple pavilion at Shang-t'ien-chu, near
Hang-chou, Chekuang.

Phot. O.S.

B. Entrance Hall of the temple at Tiger Hill,
Su-chou fu.

Phot. O.S.



A



B

PLATE 19

A. Ancestral Temple at An-hai, Ch'uan-chou,
Fukien.

Phot. Dr. Ecke.

B. The Confucius Temple at Ch'uan-chou,
Fukien.

Phot. Dr. Ecke.

.

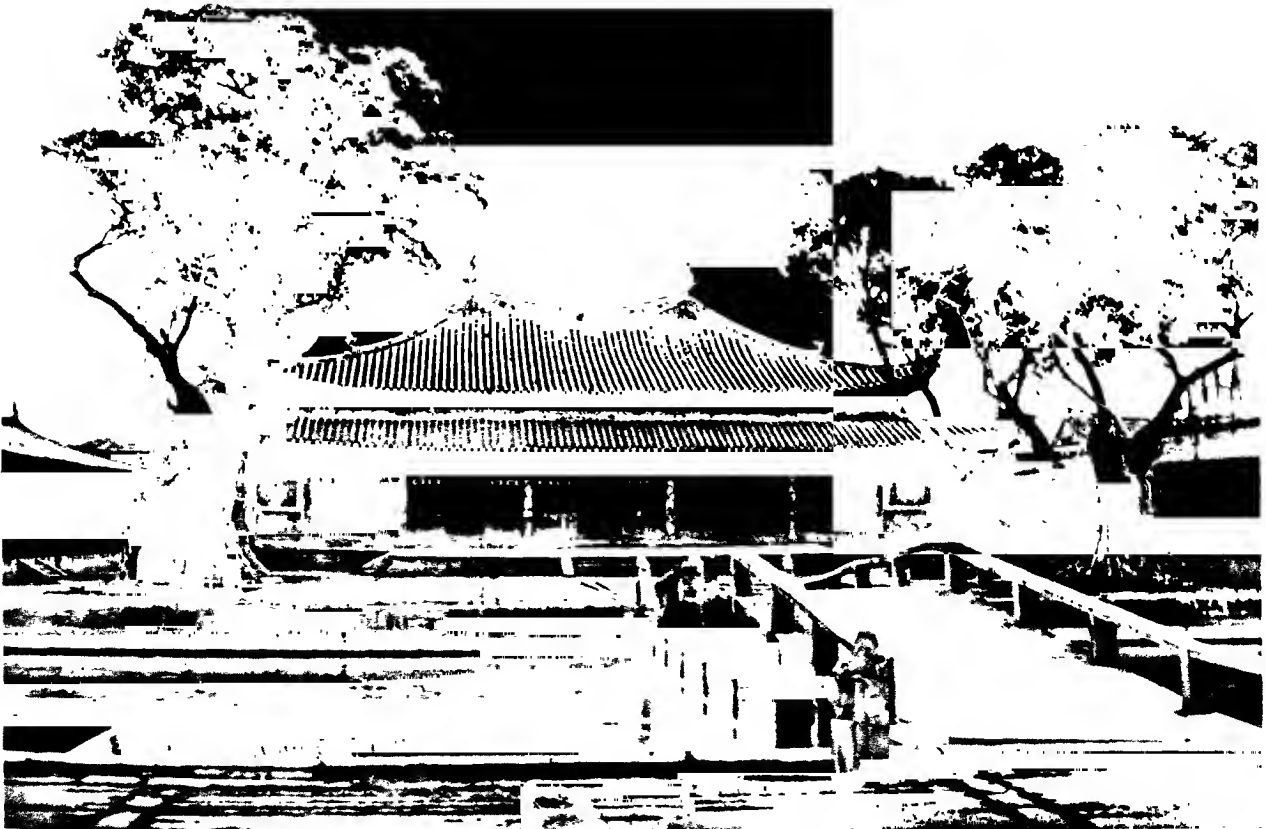
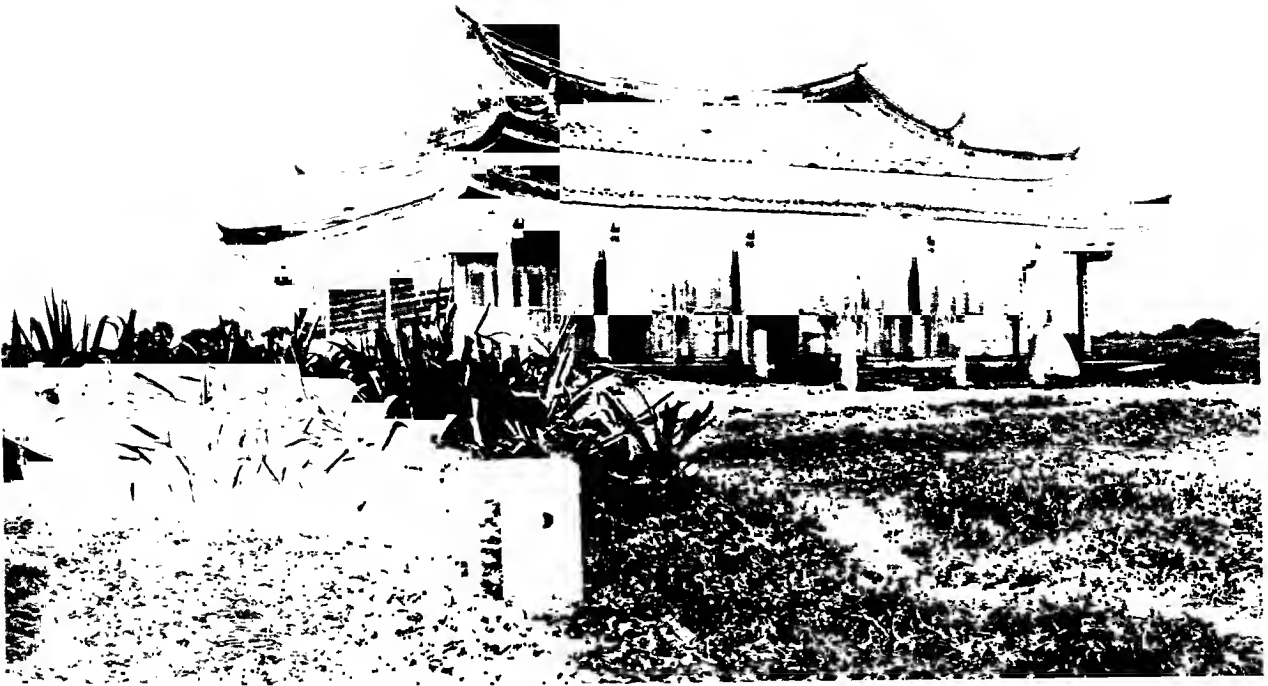


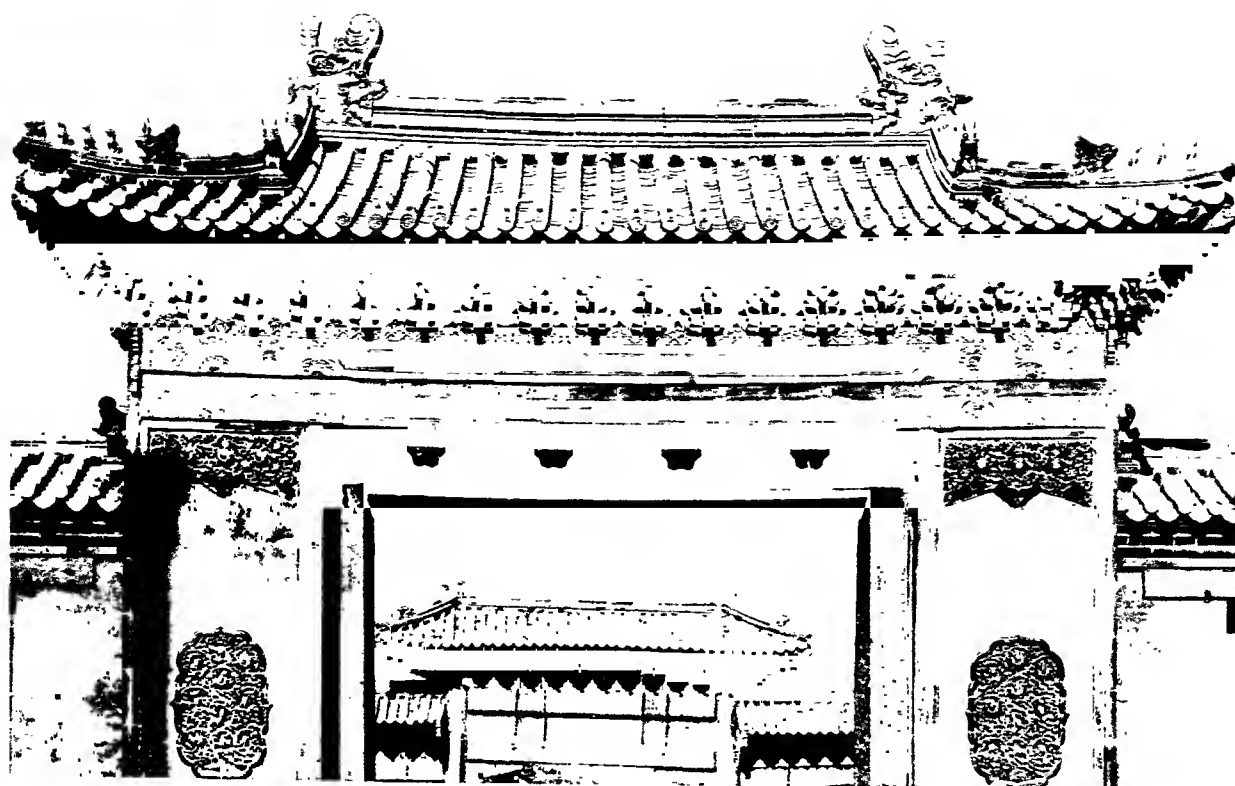
PLATE 20

- A. Characteristic roof with ridge ornaments
and *kuet-lung tzu* on a gateway at the
Sea Palaces, Peking.

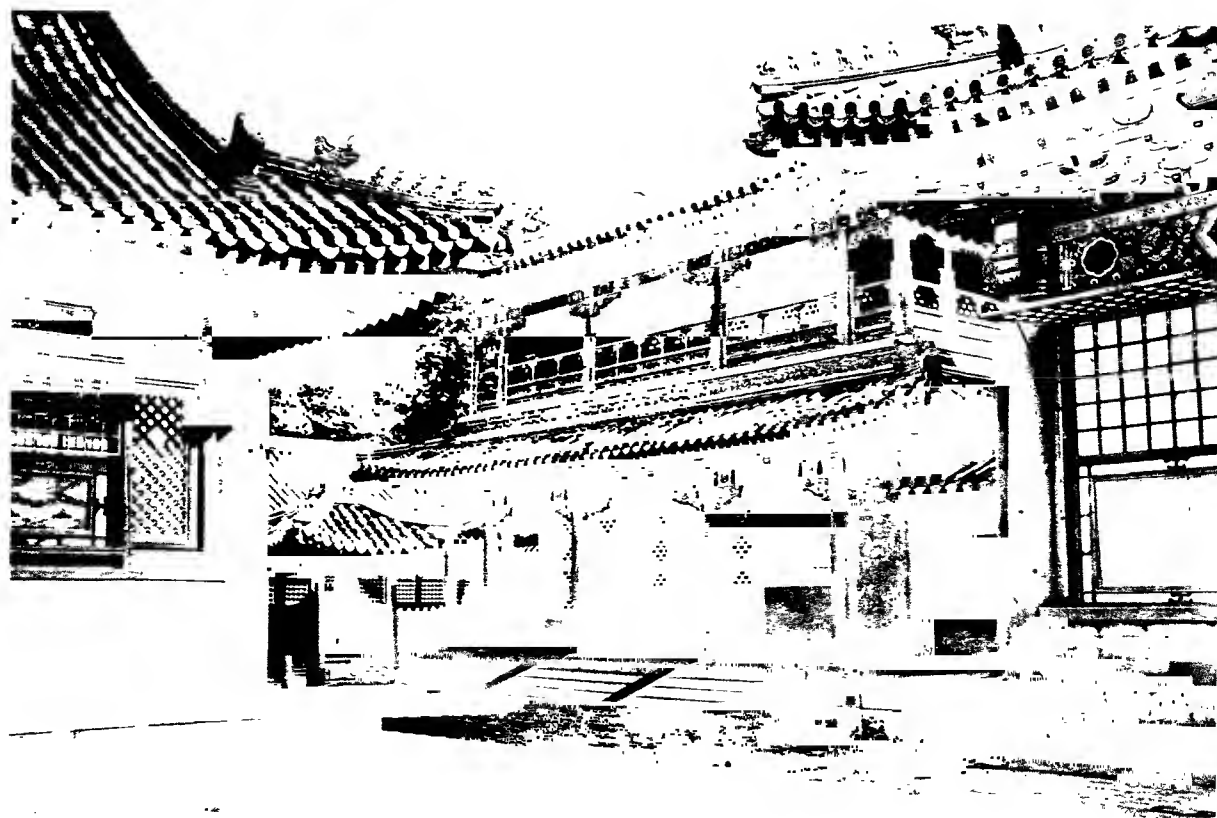
Phot. O.S.

- B. Tsao-yun lou ("Pavilion of Sweet Melod-
ies"), on Ying t'ai, Nan hai, Peking.

Phot. O.S.



A



B

PLATE 21

A. Side view of the front gallery of T'ai-ho
tien, Forbidden City, Peking.

Phot. O.S.

B. Front gallery with sculptured stone pillars
of the Confucius Temple at Ch'u-fou,
Shantung.

Phot. O.S.

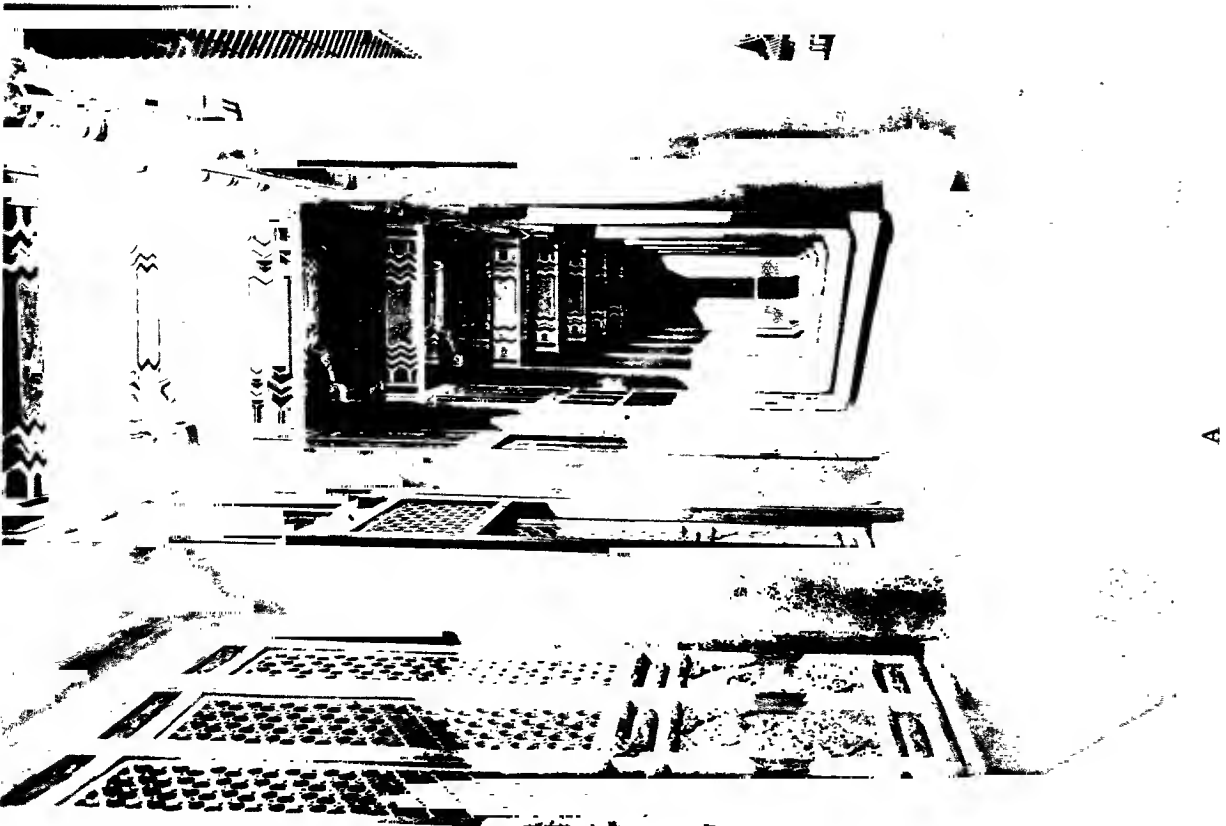
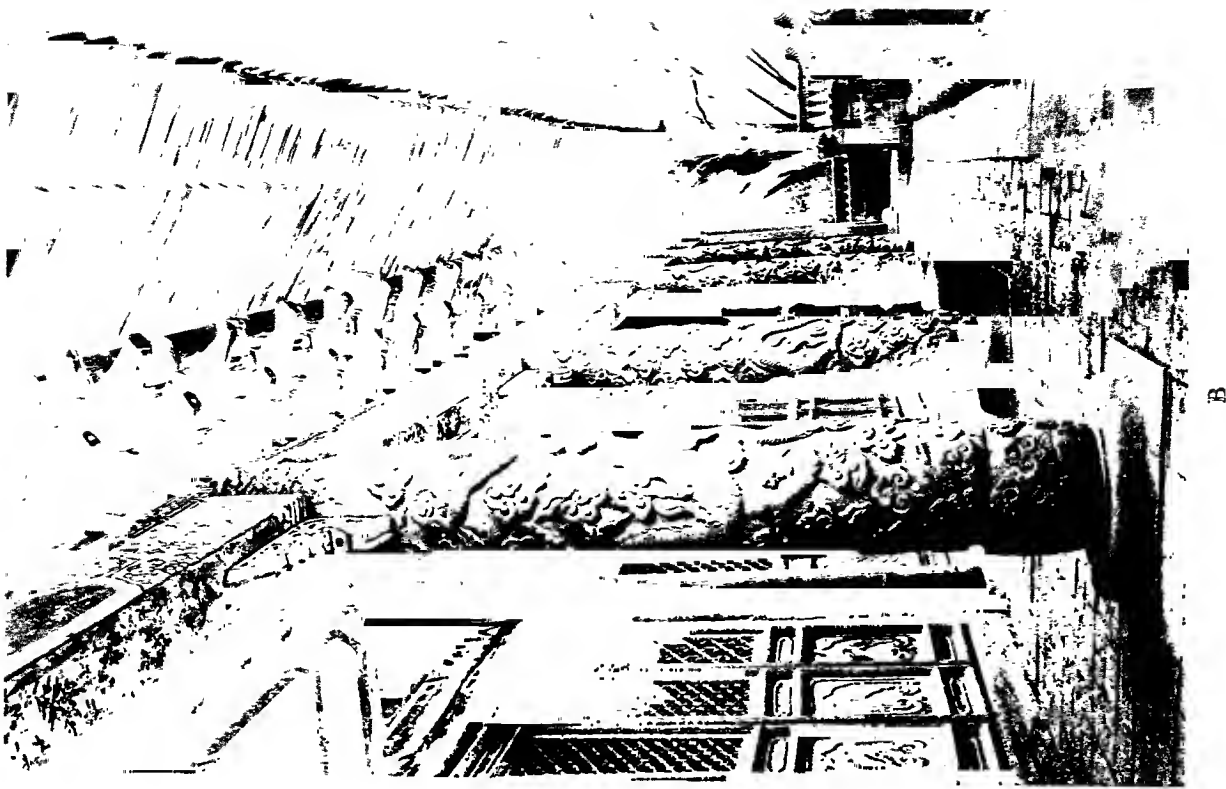


PLATE 22

Interior view of the Wen miao in K'ai-fêng,
showing its roof construction.

Phot. O.S.



PLATE 23

A. The main pavilion of Ta-fo ssü in Cheng-
ting fu.

Phot. O.S.

B. The main hall of the Great Bell Temple,
Peking.

Phot. O.S.



A



B

PLATE 24

Three-storeyed hall of Hsiao-hsi tien, Pei hai,
Peking.

Phot. O.S.



PLATE 25

Two-storeyed temple halls in Yung-ho kung
(Lama temple), Peking (Ch'ien Lung
period).

Phot. O.S.



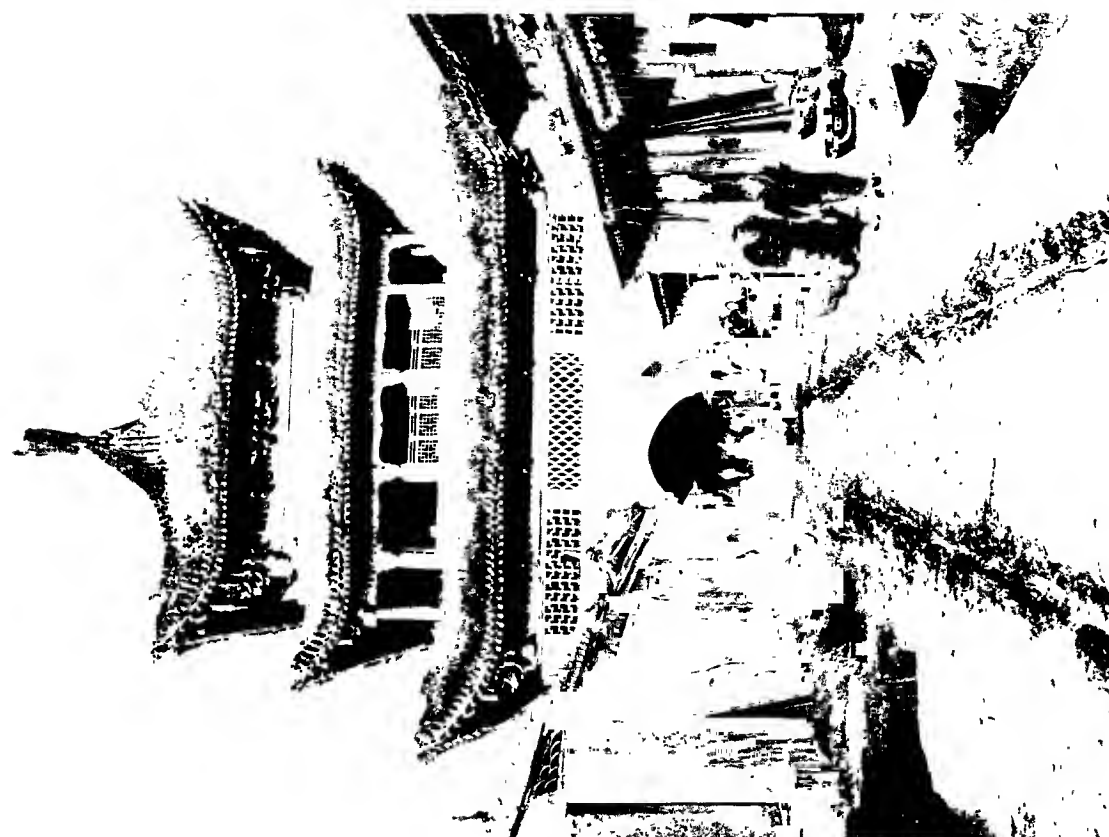
PLATE 26

A. The Bell Tower in Si-an fu, Shensi.

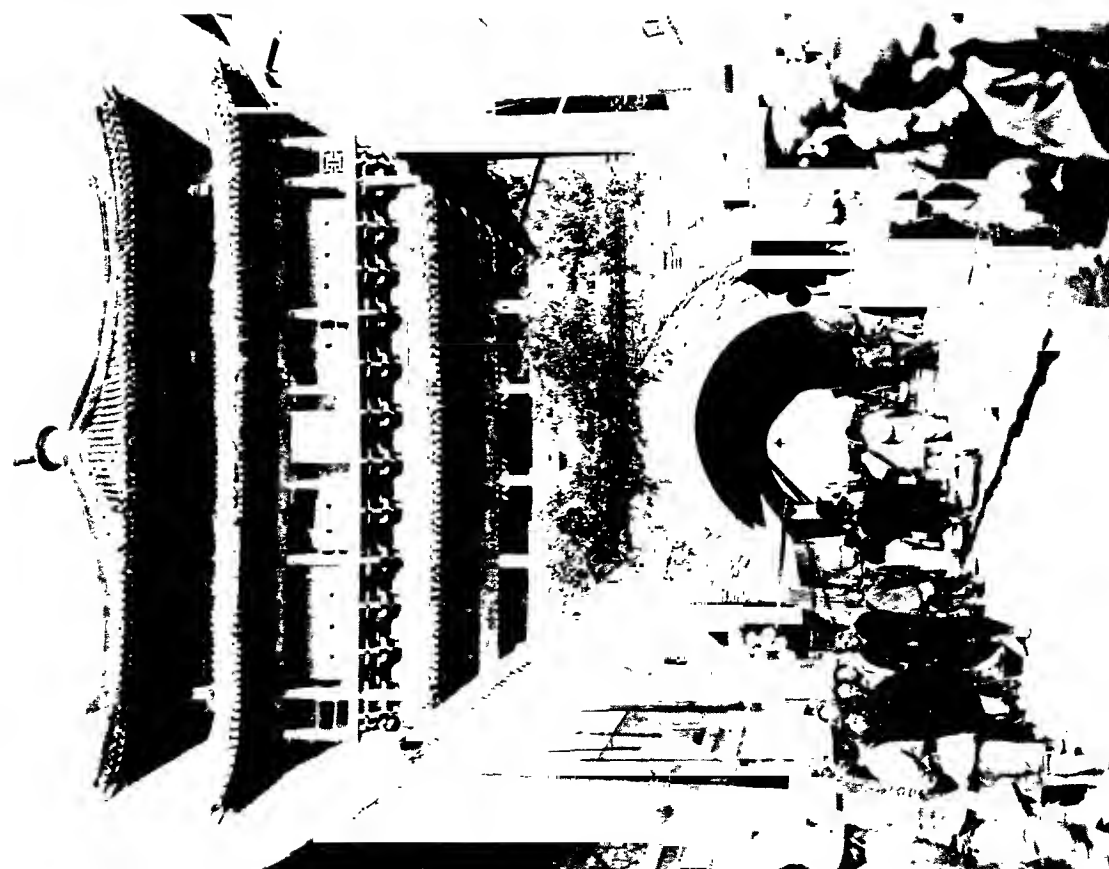
Phot. O.S.

B. The Drum Tower in Hsien-yang, Shensi.

Phot. O.S.



B



A

PLATE 27

- A. The Drum Tower at Ta-t'ung fu, Shansi.
Phot. O.S.
- B. The Kuei-hsing ko at Ch'üan-chou, Fukien.
Phot. Dr. Ecke.

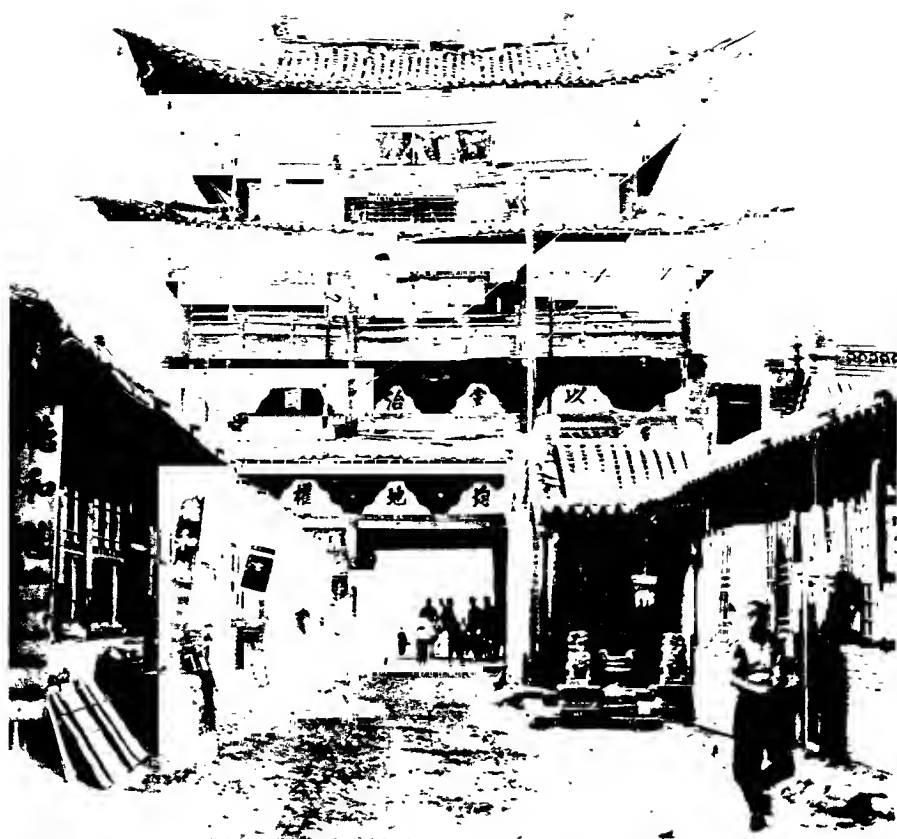


PLATE 28

A. The pavilion of the Great Bell at the Ta-chung ssü, Peking.

Phot. O.S.

B. Round pavilion at the Altar of Agriculture.

Phot. O.S.



A



B

PLATE 29

A, B. Interior views of the pavilion of the
Great Bell, Ta-chung ssü, Peking.

Phot. O.S.

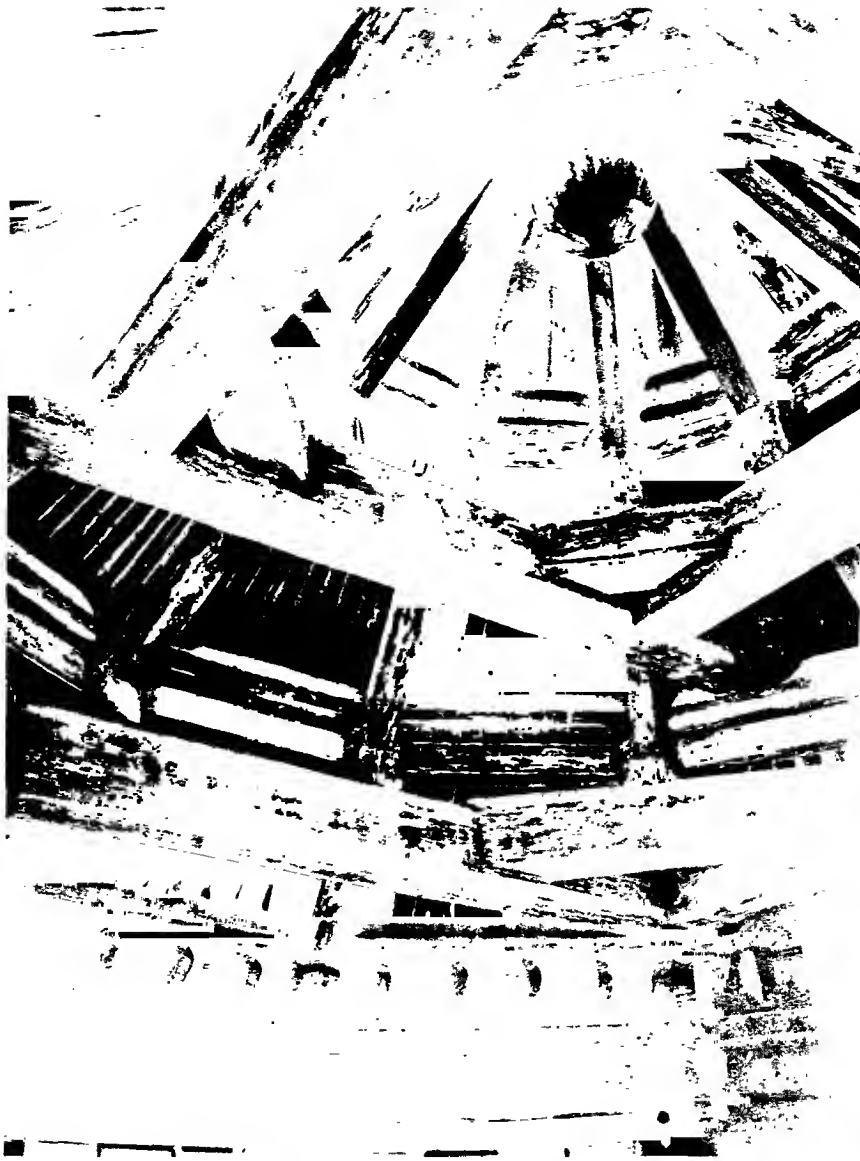
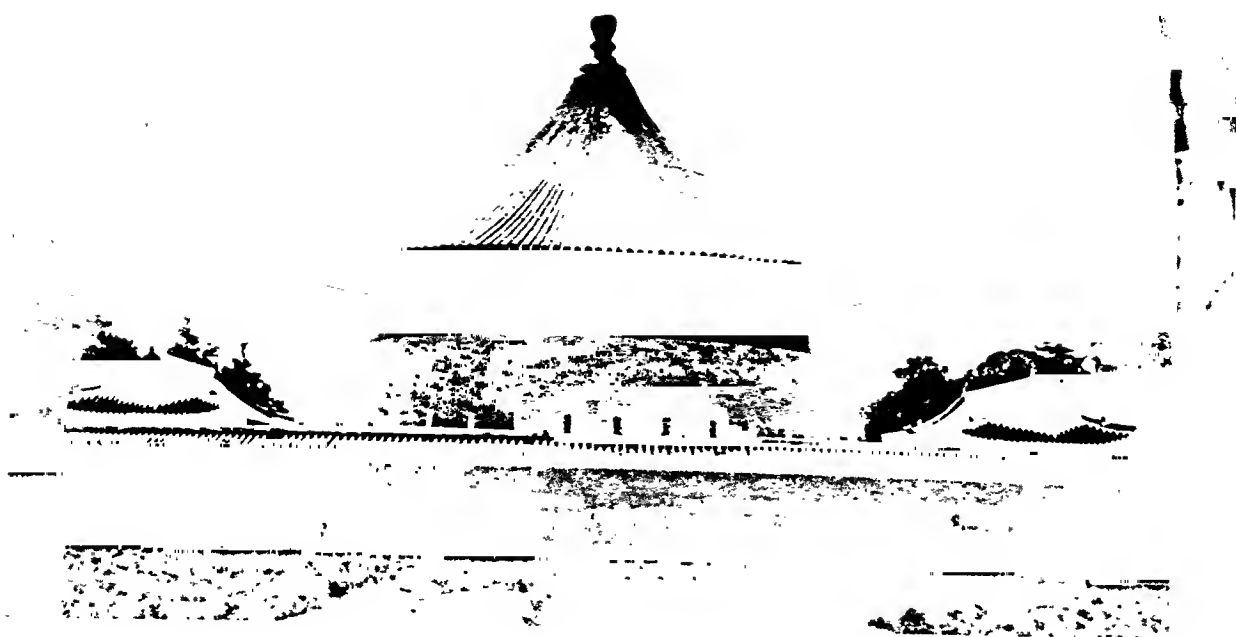


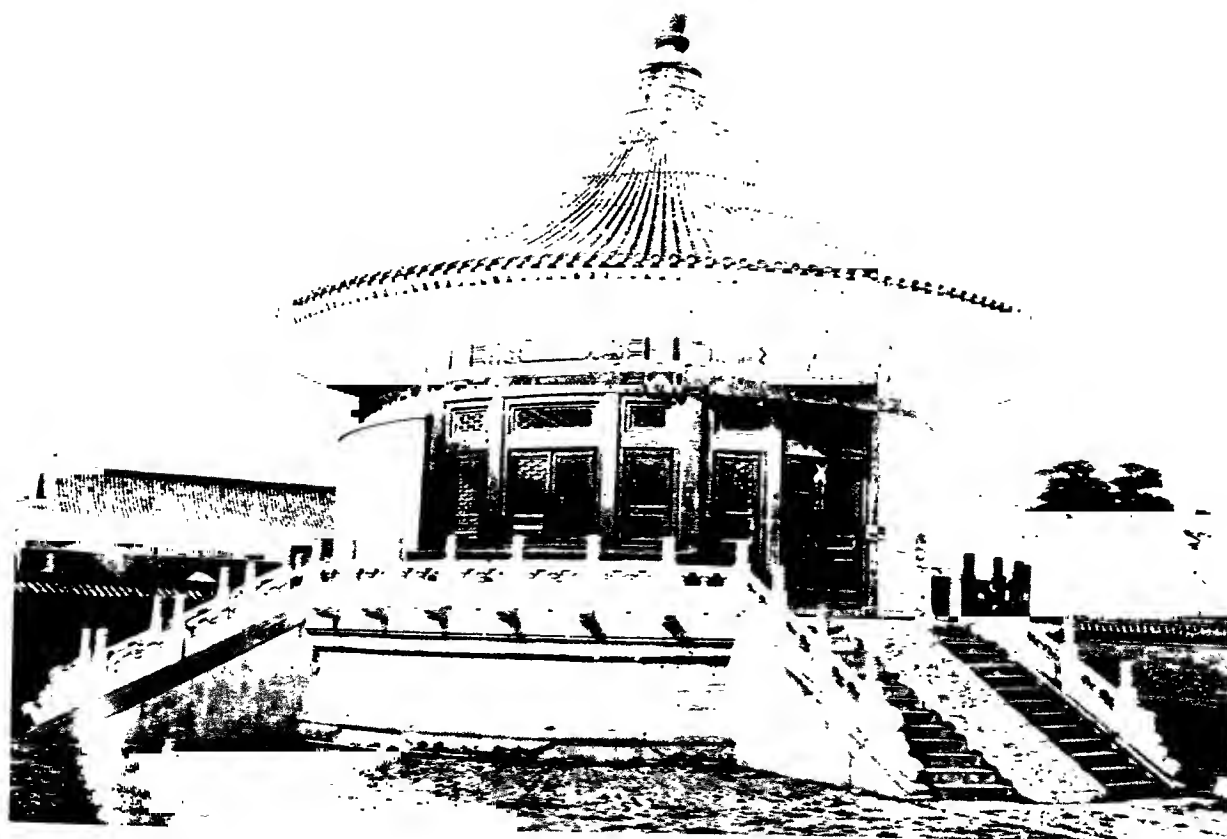
PLATE 30

A, B. Front and back views of Huang-ch'iu
yu, at the Altar of Heaven.

Phot. O.S.



A



B

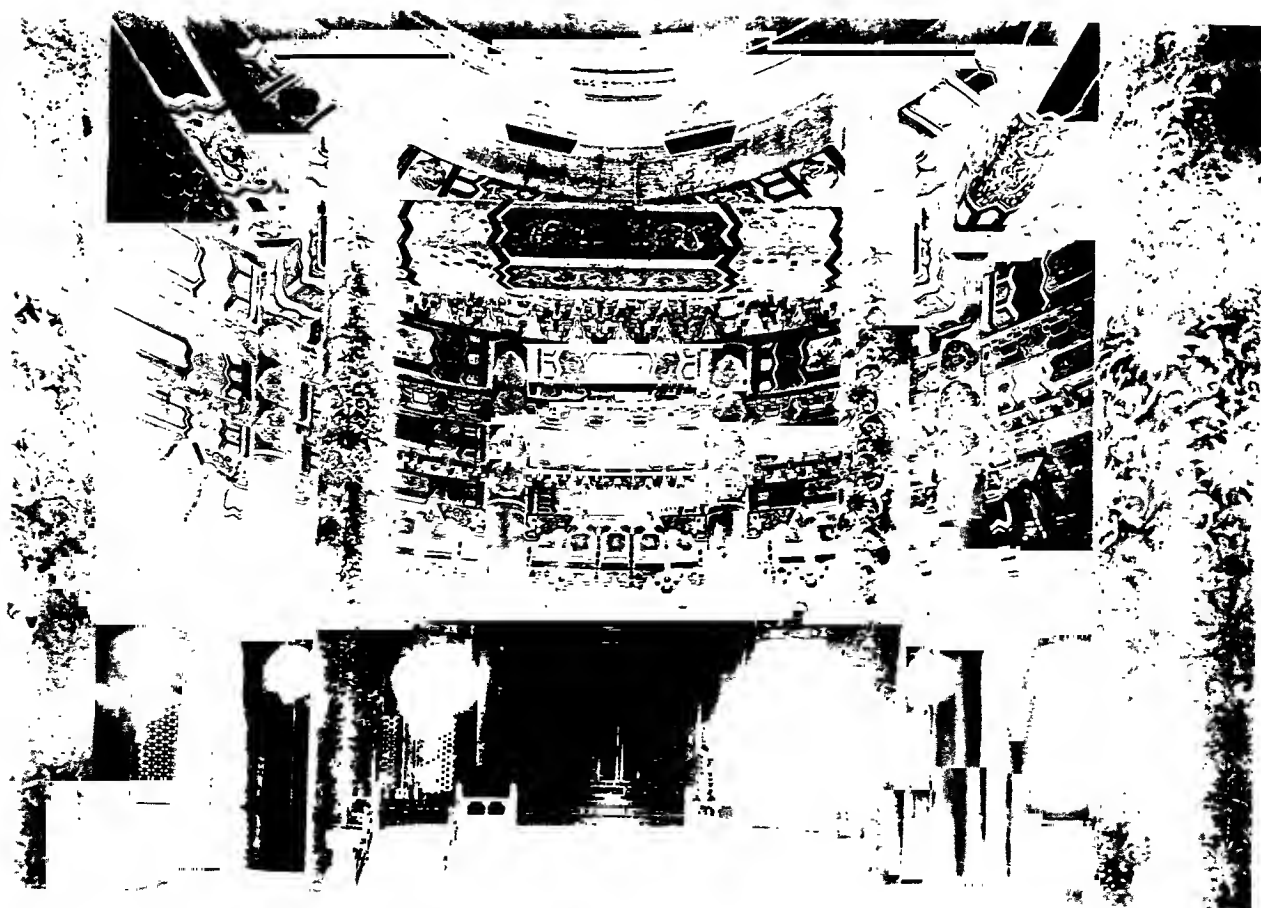
2

PLATE 31

- A. The Ch'i-men tien at the Altar of Heaven.
Phot. O.S.
- B. Interior view of the same building.
Phot. O.S.



A



B

PLATE 32

Three of the Wu-lung ting ("Five Dragon
Pavilions"), Pei hai, Peking.

Phot. O.S.

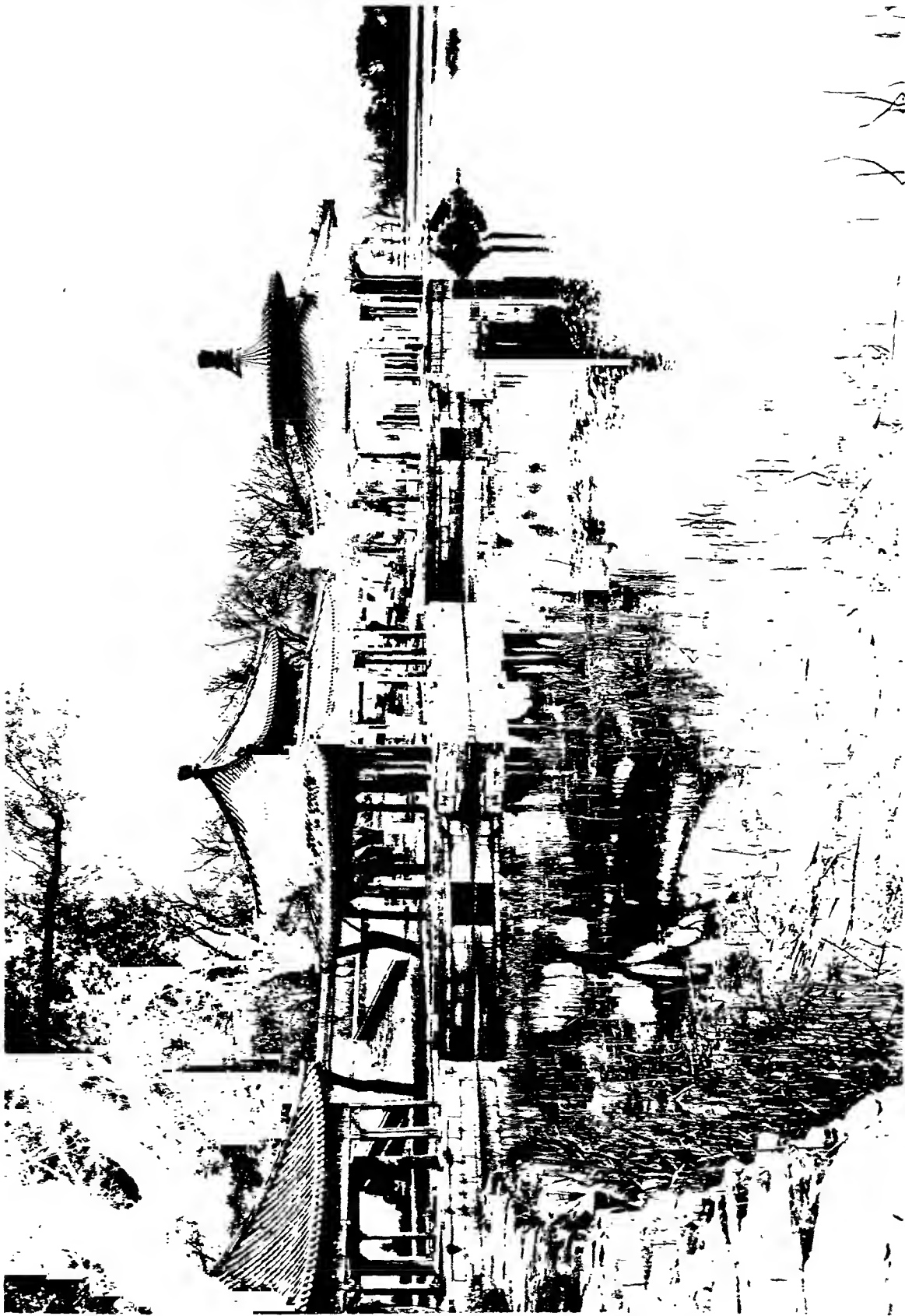


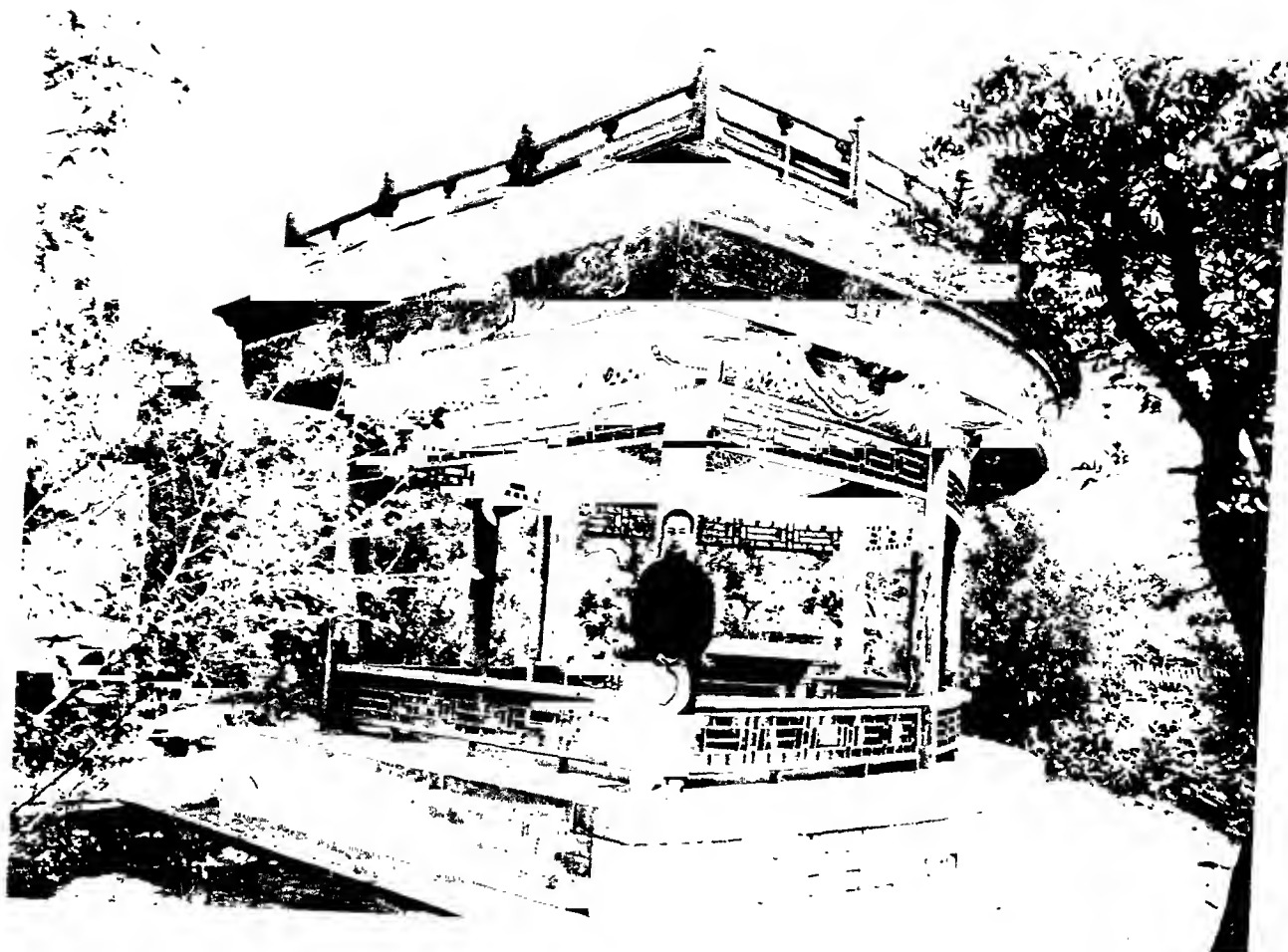
PLATE 33

A. A semicircular garden pavilion at Ch'i-yeh
fu, Peking.

Phot. O.S.

B. The eastern pavilion on Mei shan ("Coal
Hill"), Peking.

Phot. O.S.



A



B

PLATE 34

Fo-hsiang-ko (" Buddha's Fragrance tower "),
New Summer Palace, Peking.

Phot. O.S.



PLATE 35

The wooden pagoda at Ying-chou fu, Shansi.

Private Phot.

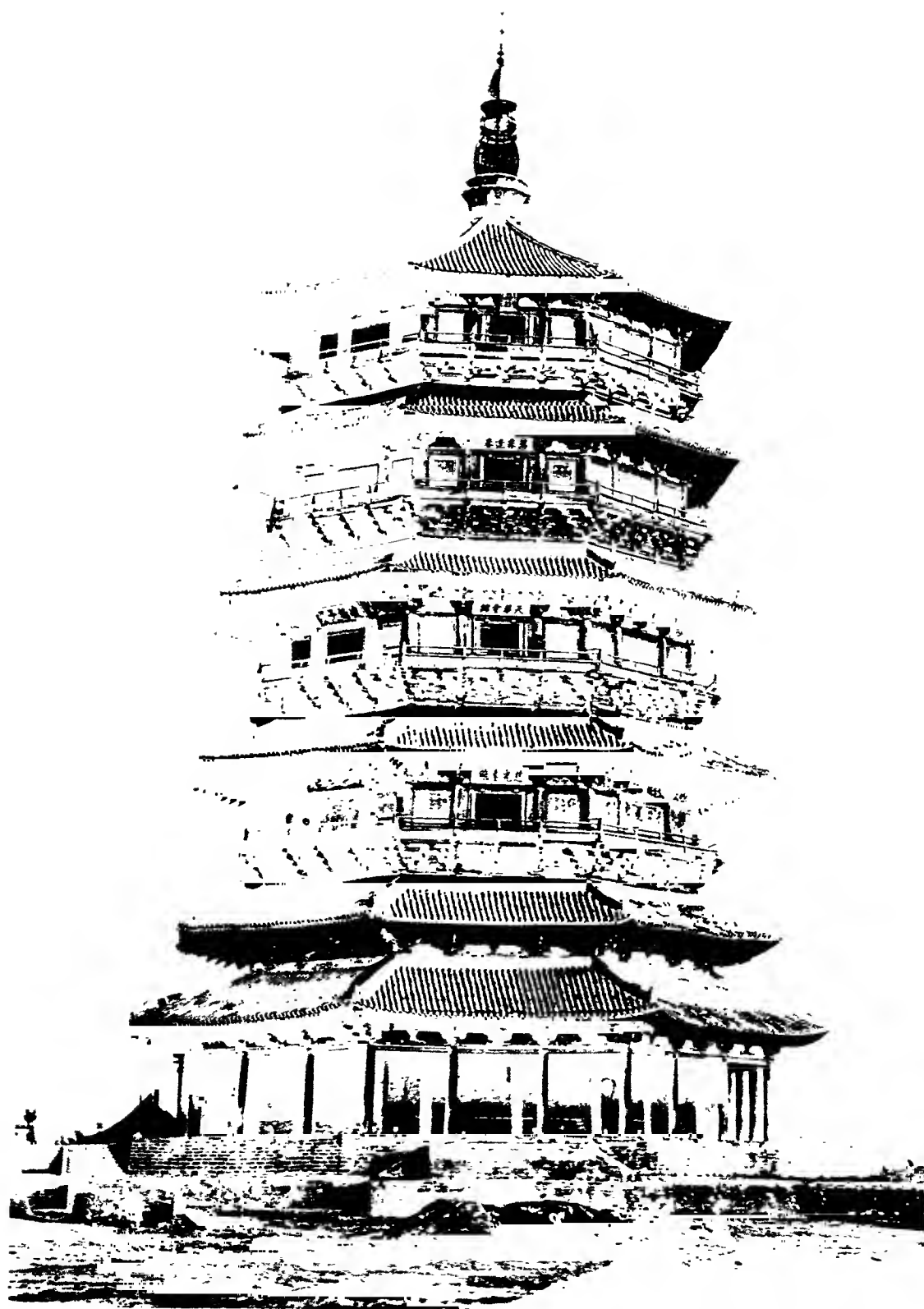


PLATE 36

A. Pei ssü ta t'a, Su-chou.

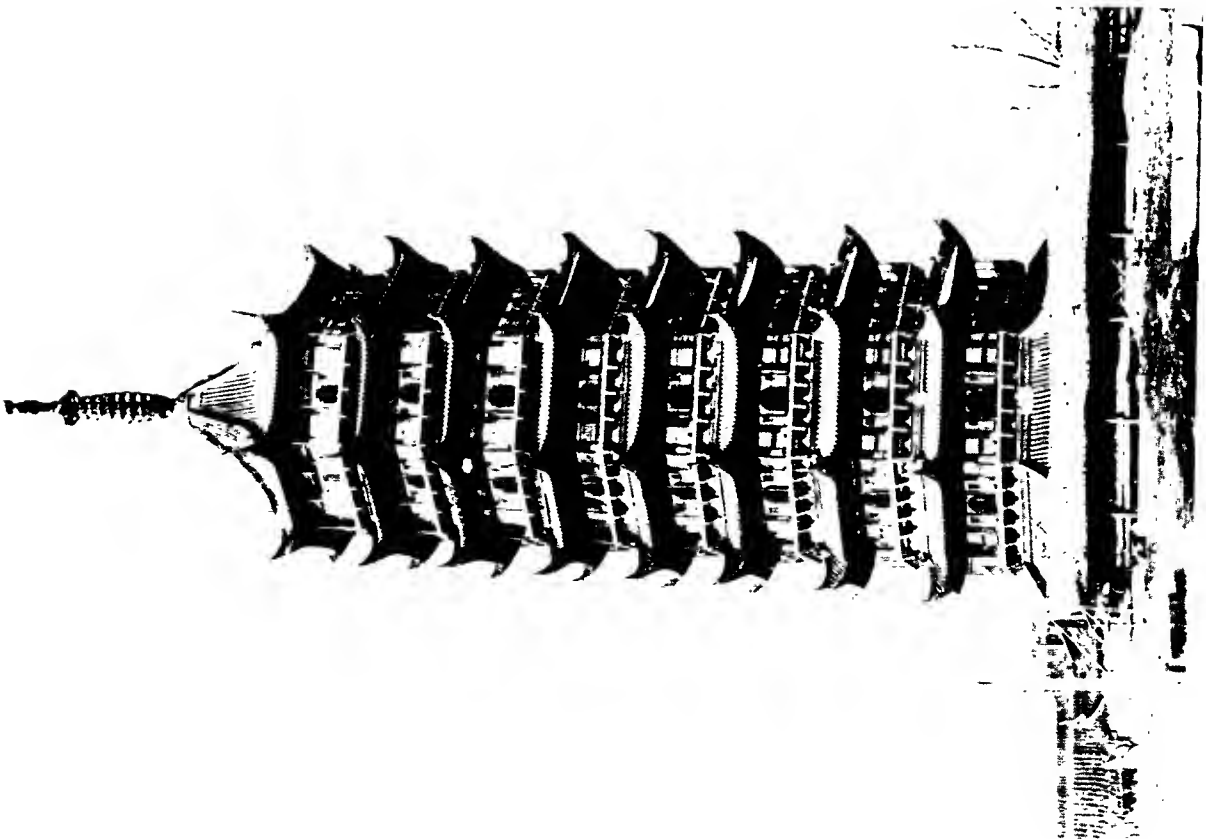
Phot. Mactavish.

B. Mu t'a ("Wooden Pagoda"), Cheng-
ting fu.

Phot. O.S.



B



A

PLATE 37

- A. One of the Tung ssü p'ai lou, Peking. *Phot. O.S.*
- B. Marble p'ai lou at Pi-yün ssü. *Phot. O.S.*

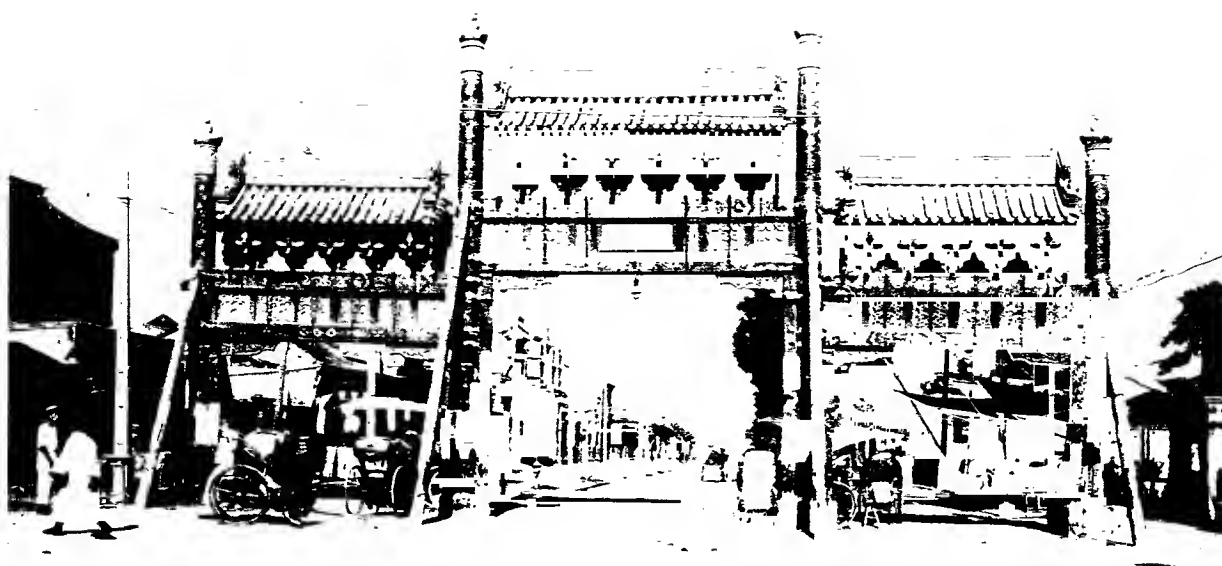


PLATE 38

A. Wooden p'ai lou at the Ping-tzū mên ta
chieh, Peking.

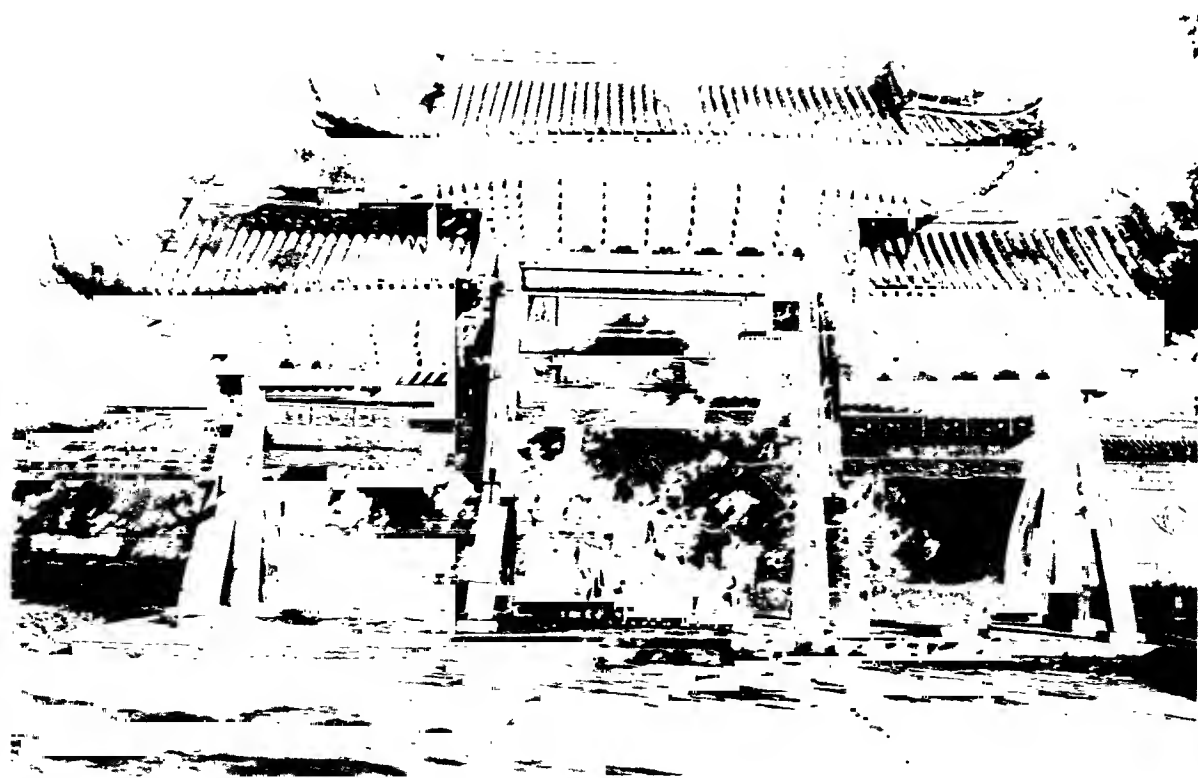
Phot. O.S.

B. Wooden p'ai lou in front of the Moham-
medan Mosque in Si-an fu.

Phot. O.S.



a



b

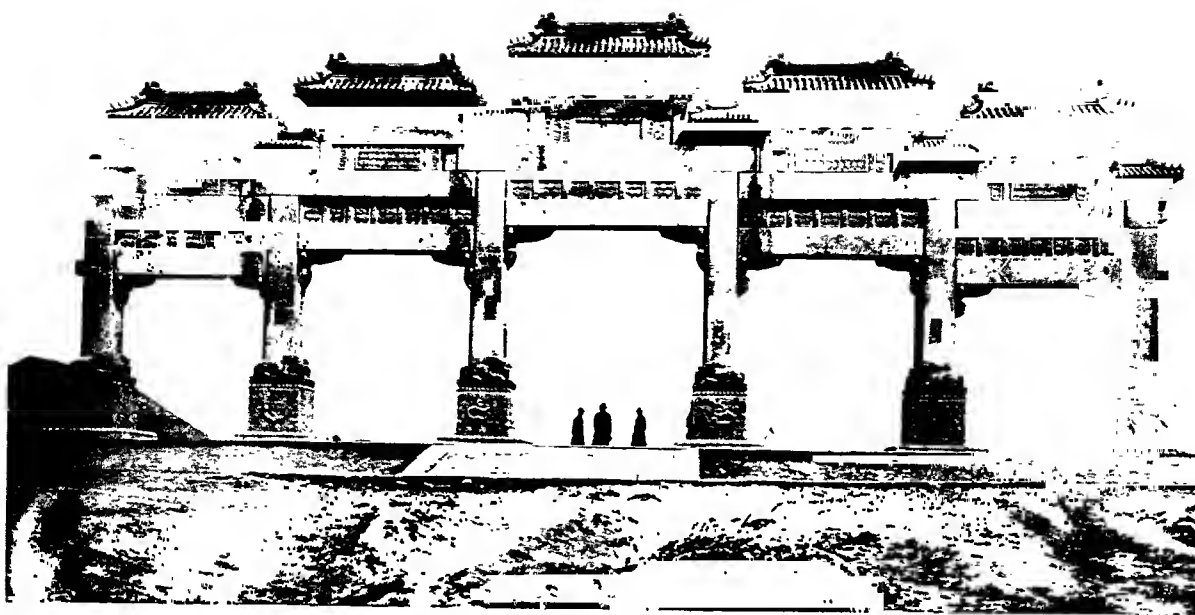
PLATE 39

**A. Marble p'ai lou on the road to the Ming
Tombs.**

Phot. O.S.

**B. Marble gateways leading up to the Altar of
Heaven.**

Phot. O.S.



A



B

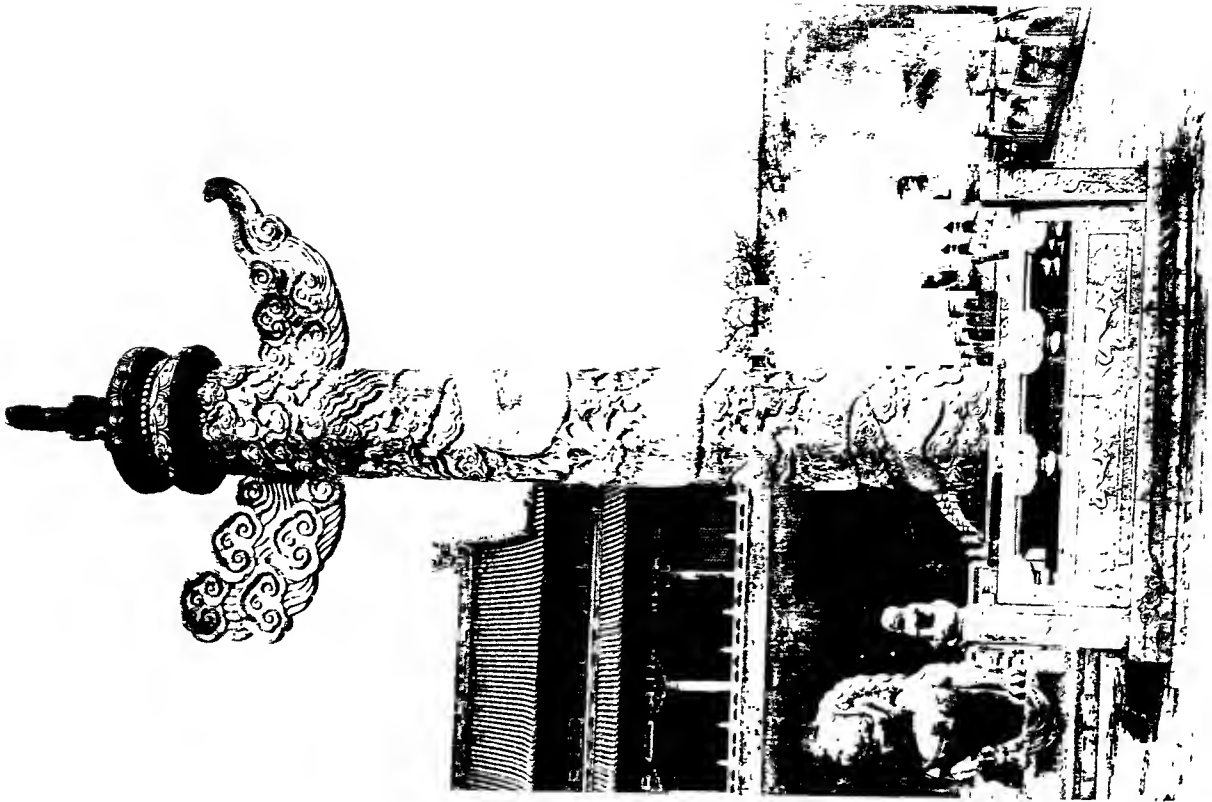
PLATE 40

A. Stone p'ai lou over the main street in Wei
hsien, Shantung.

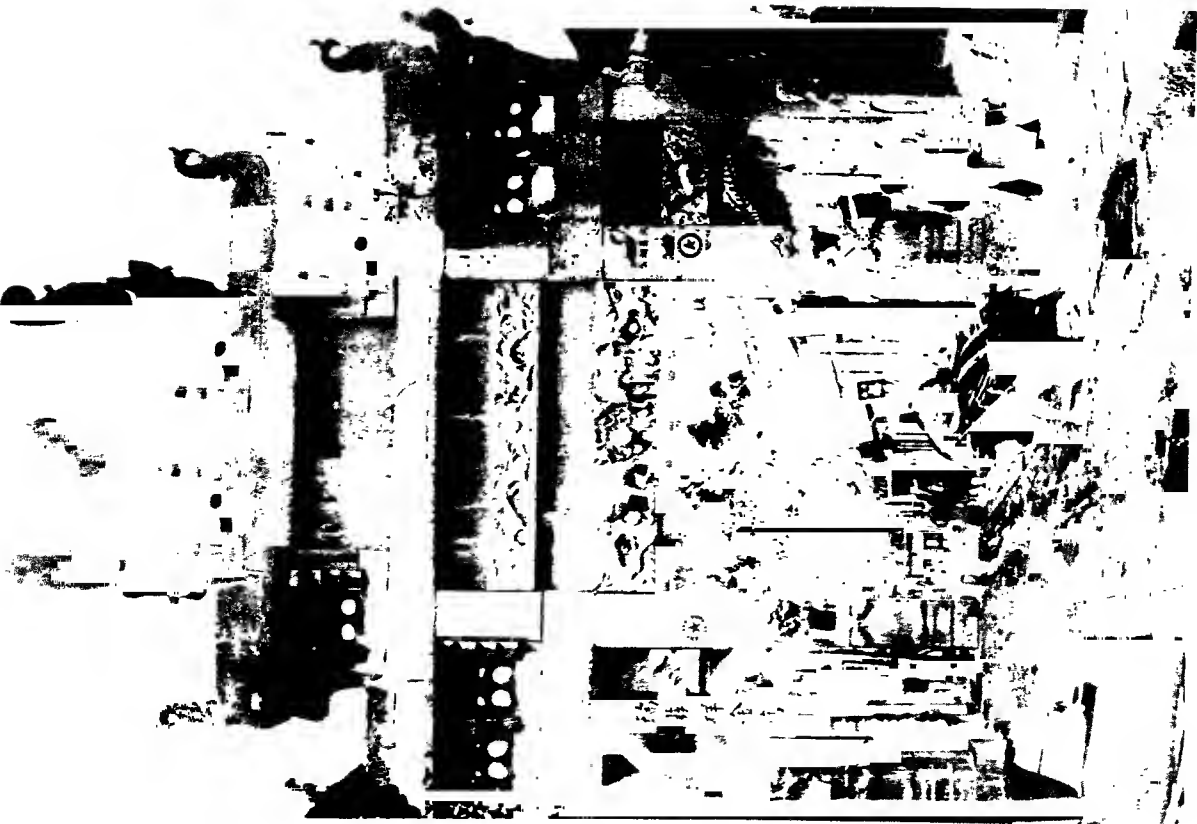
Phot. O.S.

B. Marble hua piao outside T'ien-an mén,
Forbidden City, Peking.

Phot. O.S.



B



A

PLATE 41

A. Street view with decorative shop fronts in the
North City, Peking.

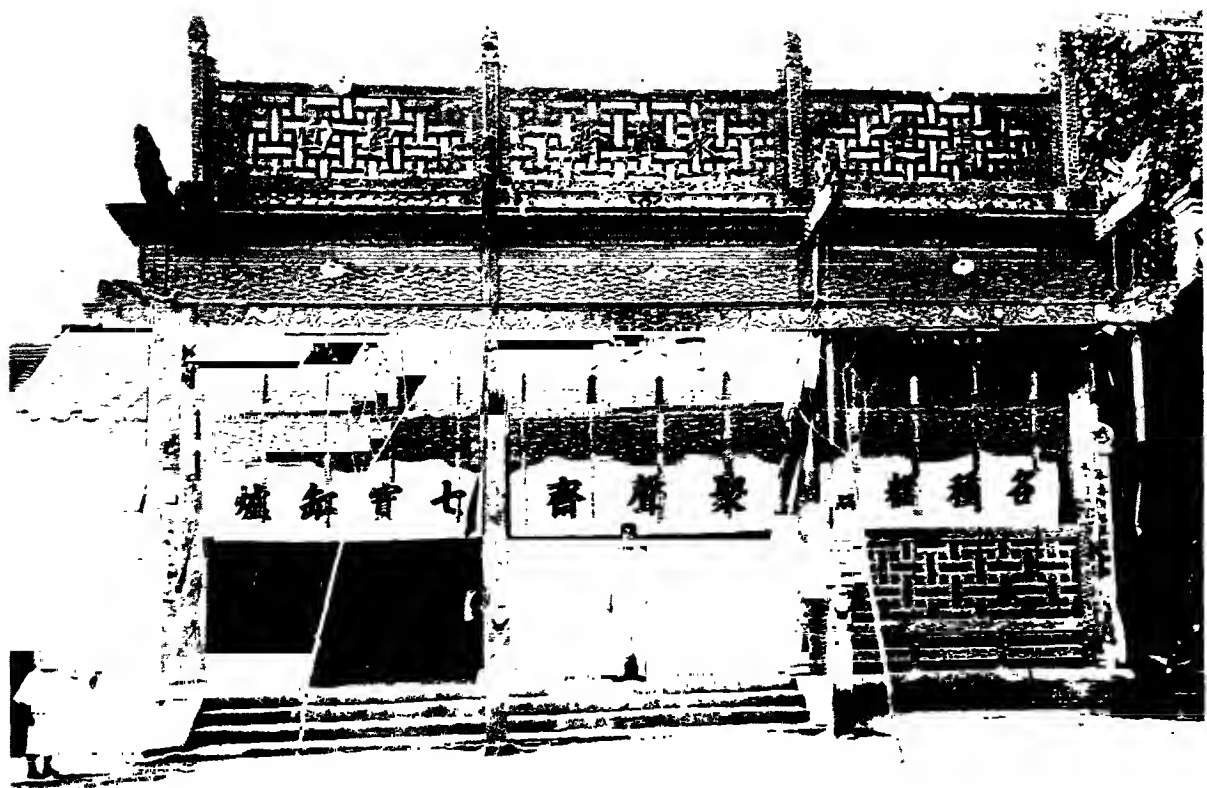
Phot. O.S.

B. Shop front with carved and gilt panels,
Peking.

Phot. O.S.



A



B

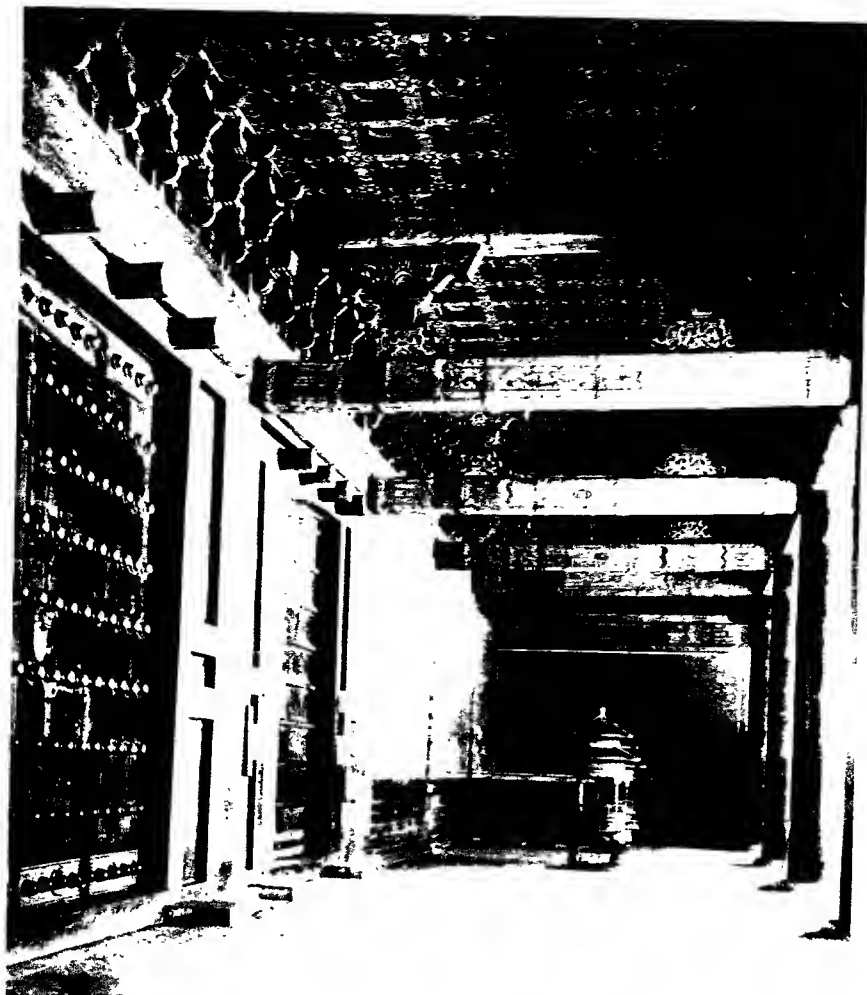
PLATE 42

A. Interior view of T'ai-ho mén, the main gate
of the Forbidden City.

Phot. O.S.

B. Outer gateway of Shang-hua-ssü, Ta-
t'ung fu.

Phot. O.S.



A



B

PLATE 43

A. The front gallery of the gate pavilion at Li-
wang fu, Peking.

Phot. O.S.

B. Interior view of the same building.

Phot. O.S.



A



B

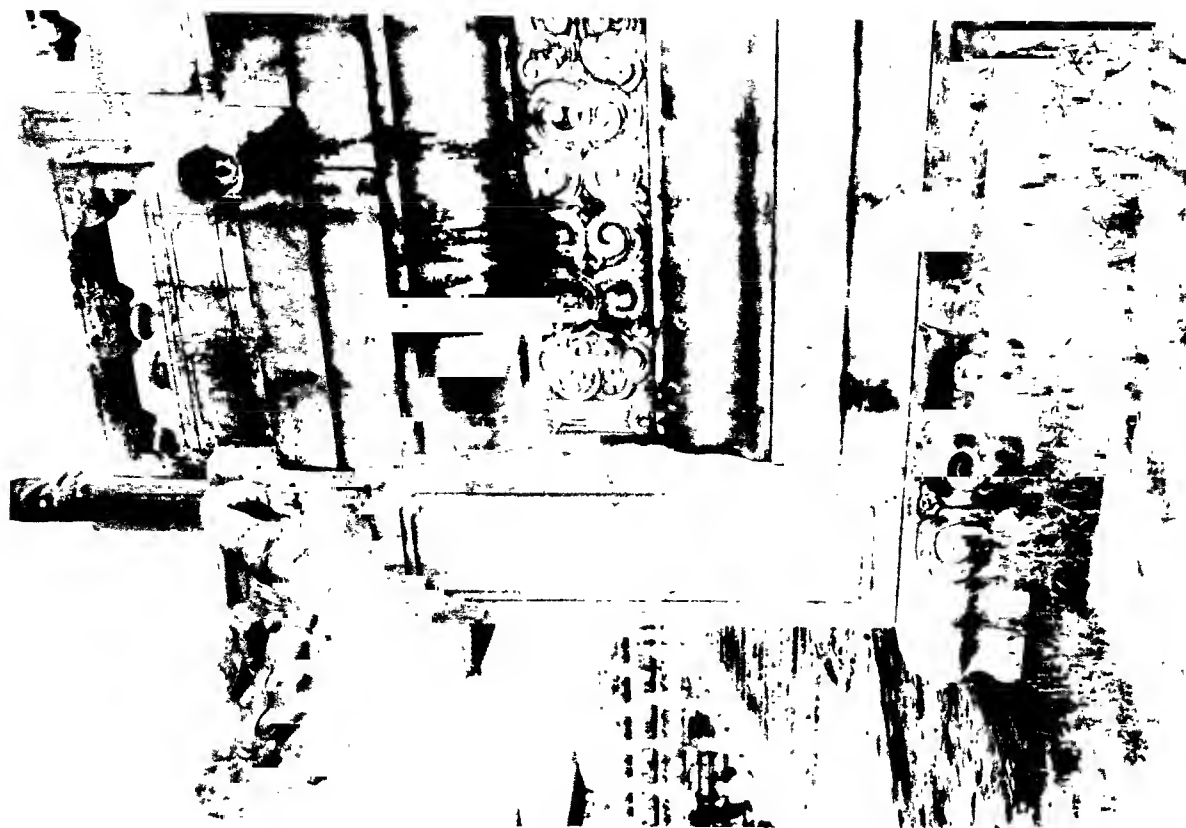
PLATE 44

A. Portion of the balustrades surrounding the
Dragon Pavement in the Forbidden City,
Peking.

Phot. O.S.

B. Corner of the main terrace, with dragon
heads, Forbidden City, Peking.

Phot. O.S.



B



A

PLATE 45

A. Balustrades at the road leading up to Kuan-ti
miao, near Honan-fu.

Phot. O.S.

B. Ornamental balustrade at a bridge near Wu-
ying tien, Forbidden City, Peking.

Phot. O.S.



A



B

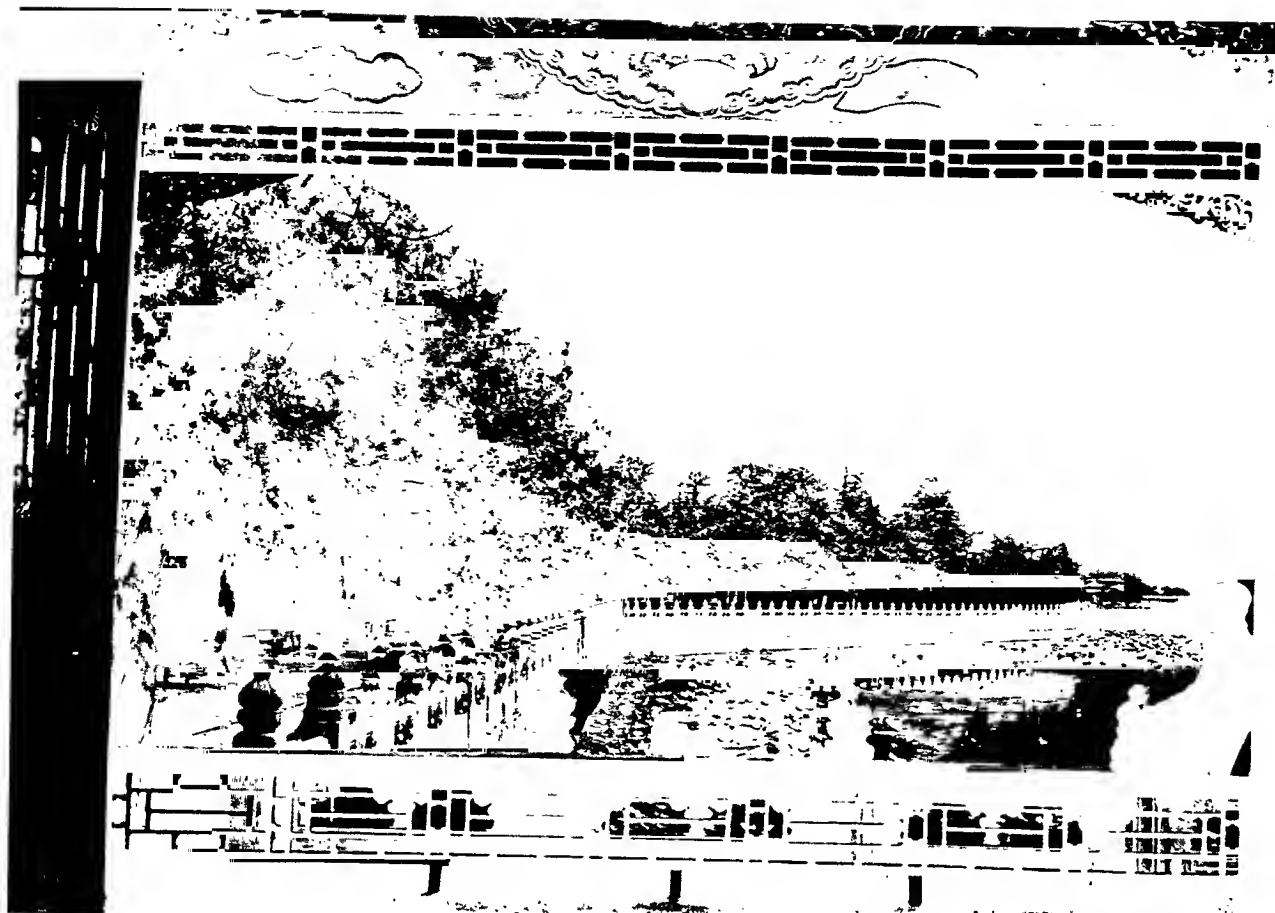
PLATE 46

**A. View of the wooden and marble balustrades
at the Summer Palace.**

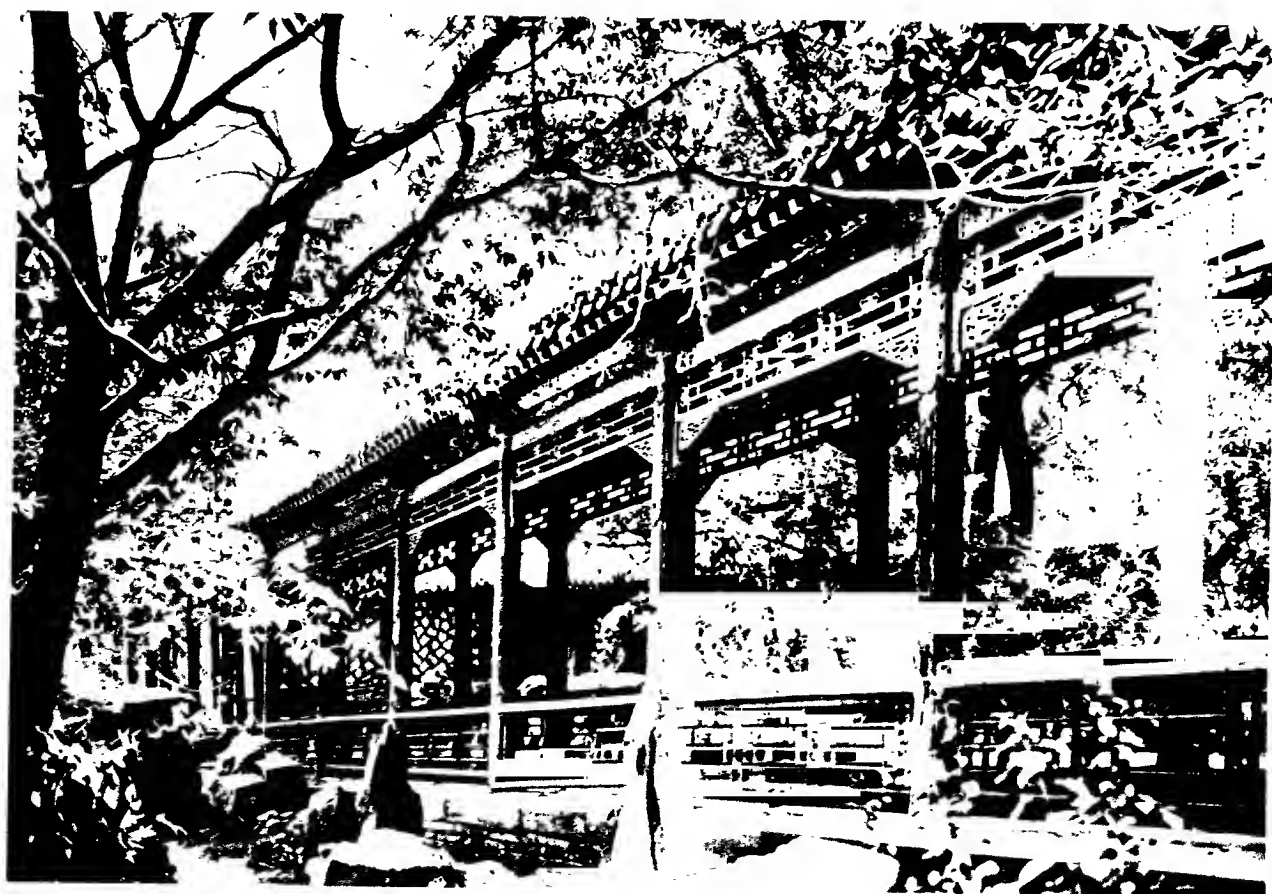
Phot. O.S.

**B. Long gallery in the garden of Ch'ı Yeh fu,
Peking.**

Phot. O.S.



A



B

PLATE 47

A. Yin-an tien, a pavilion in the garden of Li
Wang fu, Peking.

Phot. O.S.

B. Lai-shung ko, a pavilion at Ch'eng Wang fu,
Peking.

Phot. O.S.



A



B

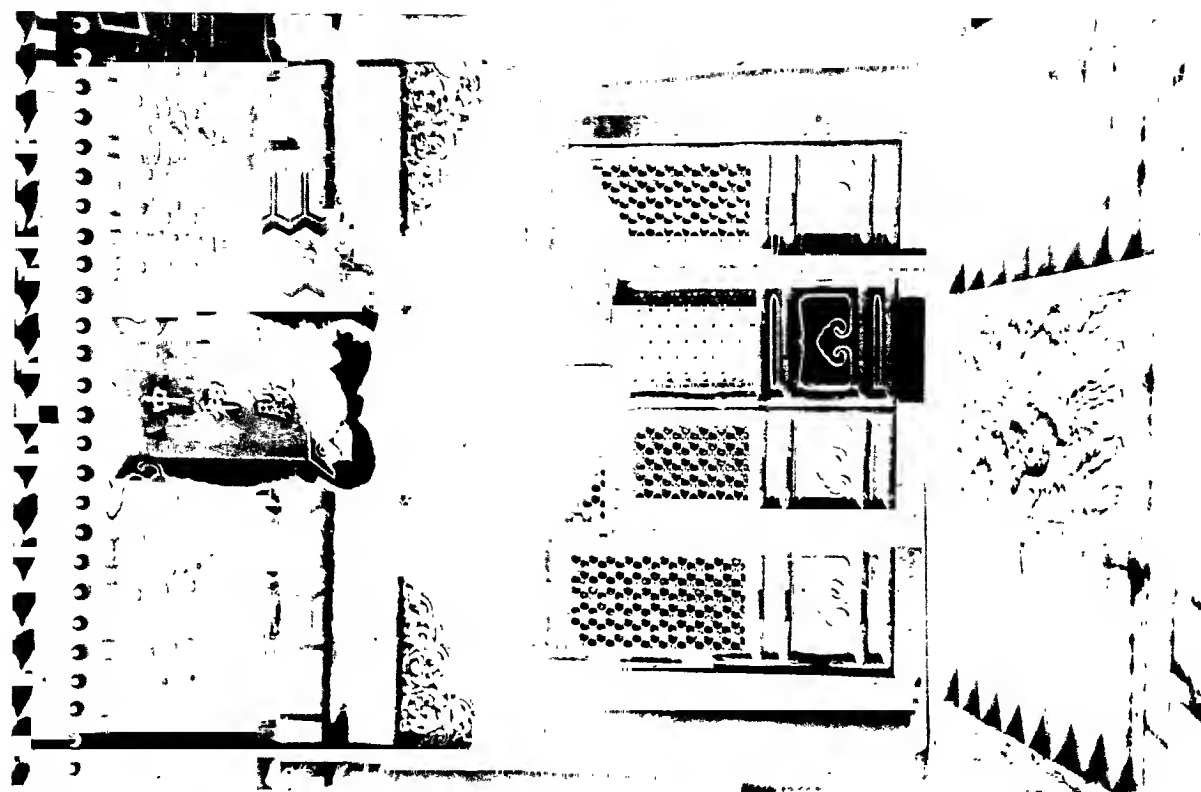
PLATE 48

A. Sculptured doorway at Shang-hua-yin ssü,
Ta-t'ung fu.

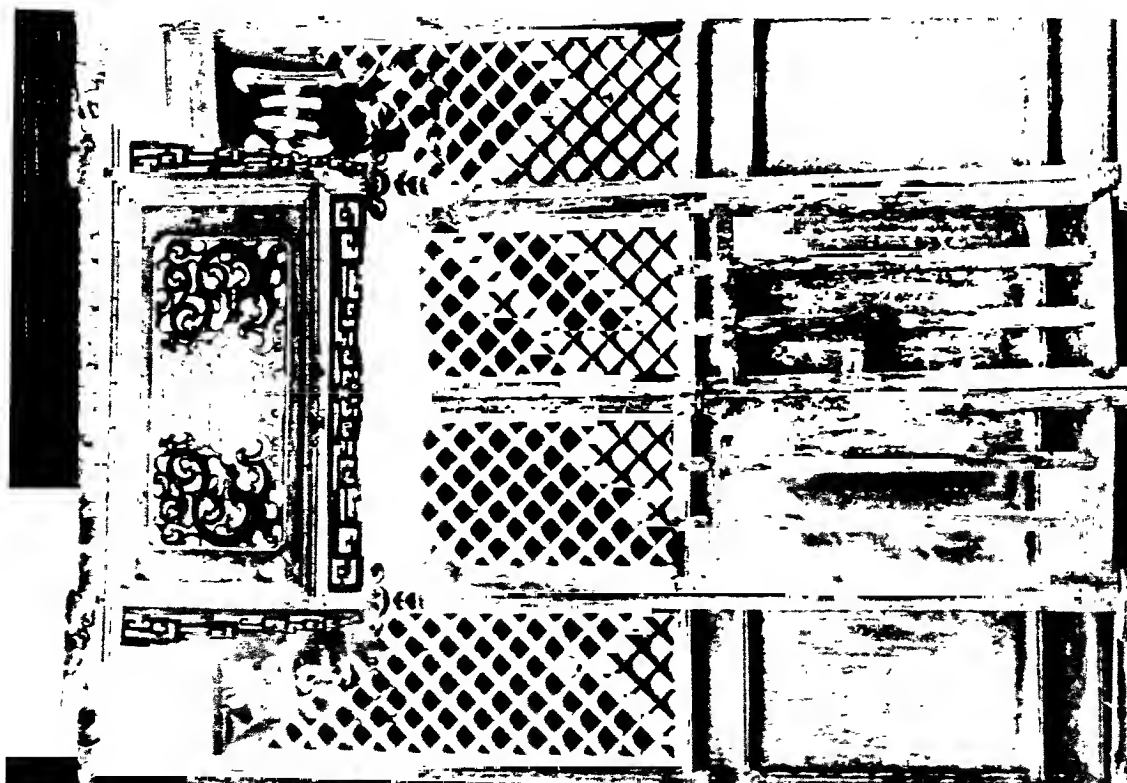
Phot. O.S.

B. The main doorway of Chung-ho tien, For-
bidden City.

Phot. O.S.



B



A

PLATE 49

Sculptured door panels from T'ai-ho tien,
Forbidden City, Peking.

Phot. O.S.

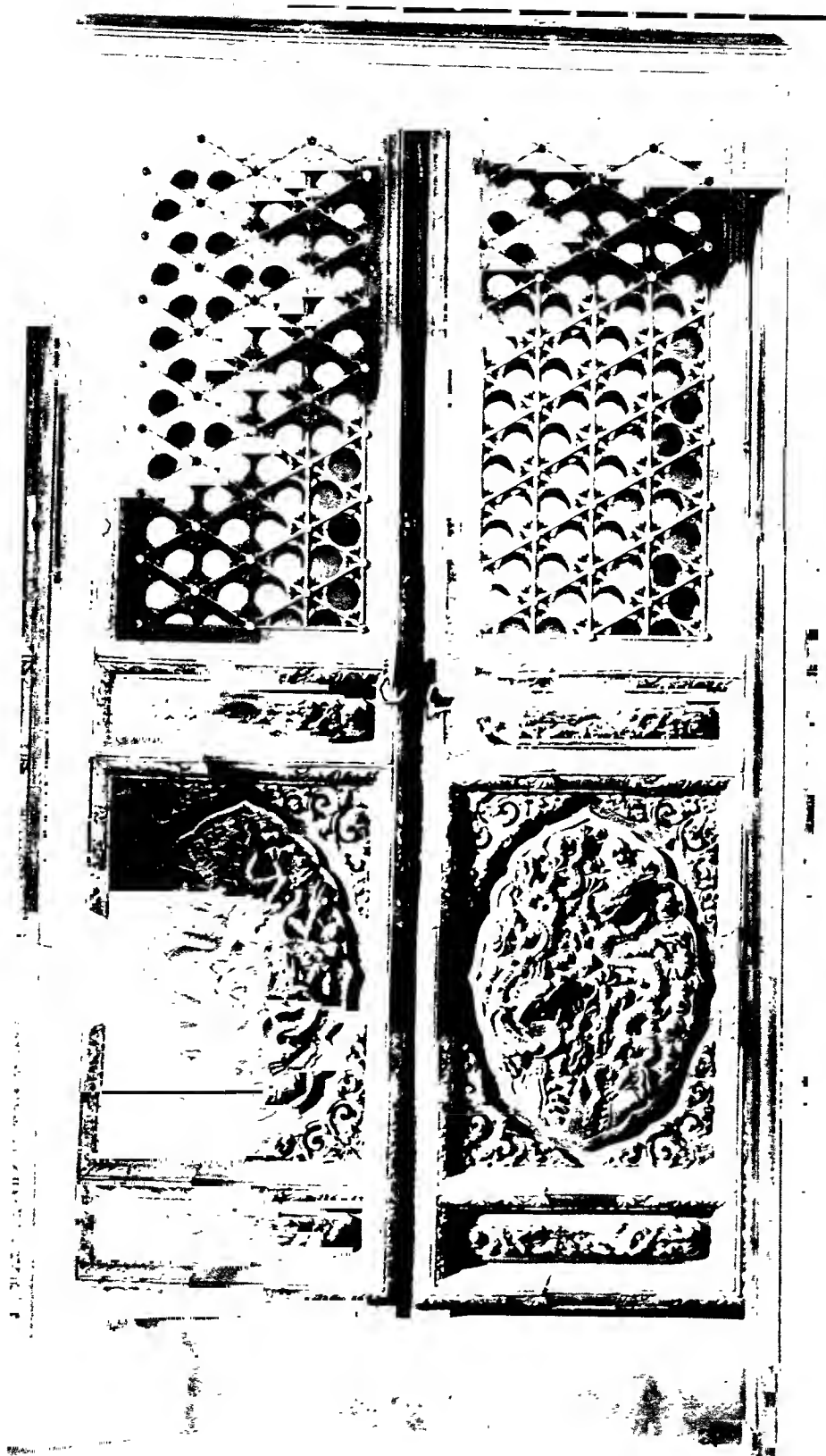


PLATE 50

- A. Circular doorway in the garden of the
Confucius Temple at Ts'in-ning chou.
Phot. O.S.
- B. Garden walls with ornamental windows in
Pei hai, Peking.
Phot. O.S.



PLATE 51

- A. A gourd-shaped doorway in a pavilion at
Ch'eng Wang fu, Peking. *Phot. O.S.*
- B. Small garden pavilion with cinquefoil
windows, Nansiang, Kiangsu. *Phot. O.S.*
- C. Pavilion and garden wall with ornamental
doorway in Pei hai, Peking. *Phot. O.S.*



12

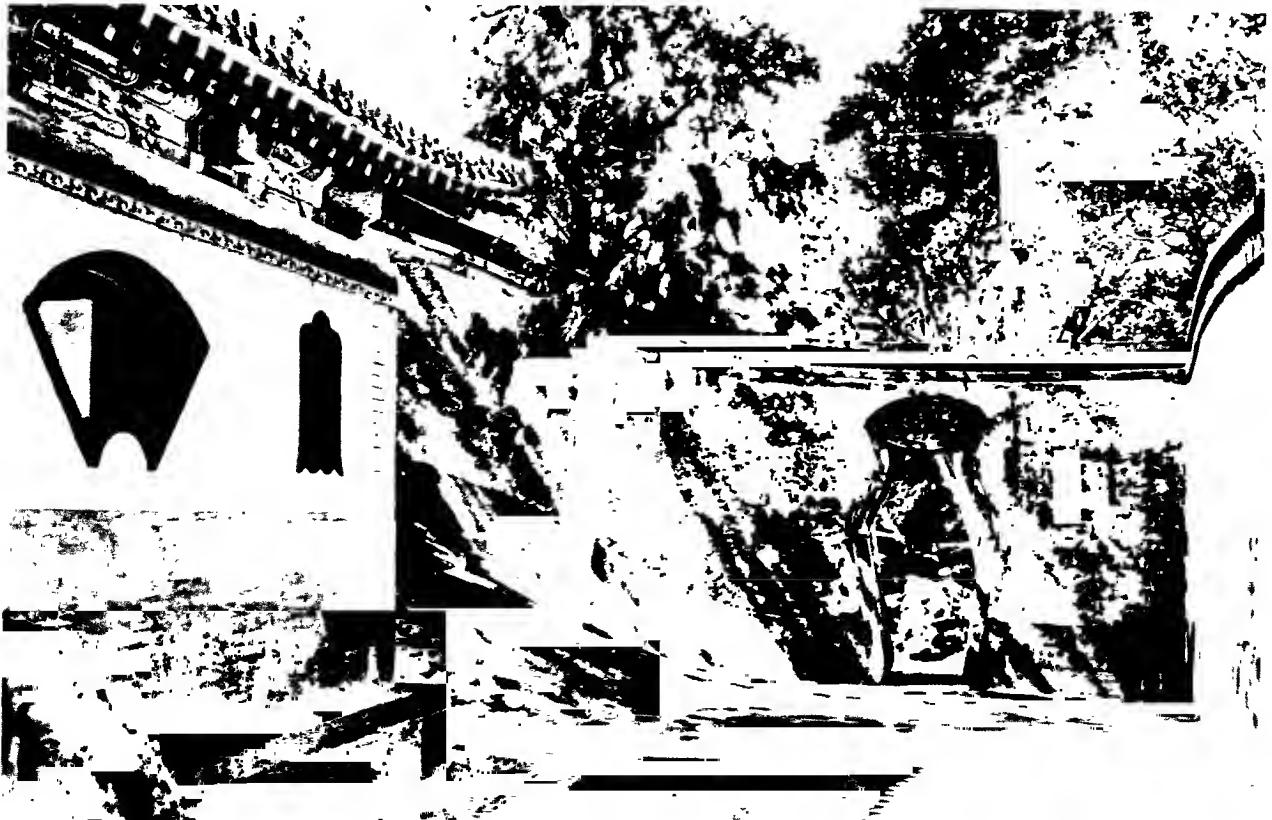


PLATE 52

- A. The city wall of Tokoto, one of the largest
læss structures in northern China. *Phot. Karlbeck.*
- B. Typical læss dwellings in Suiyuan. *Phot. Karlbeck.*
- C. View of a village near Paoto, Suiyuan.
Phot. Karlbeck.



A



PLATE 53

A. The Hsi-li-yü village on the Yellow River,
Eastern Shensi.

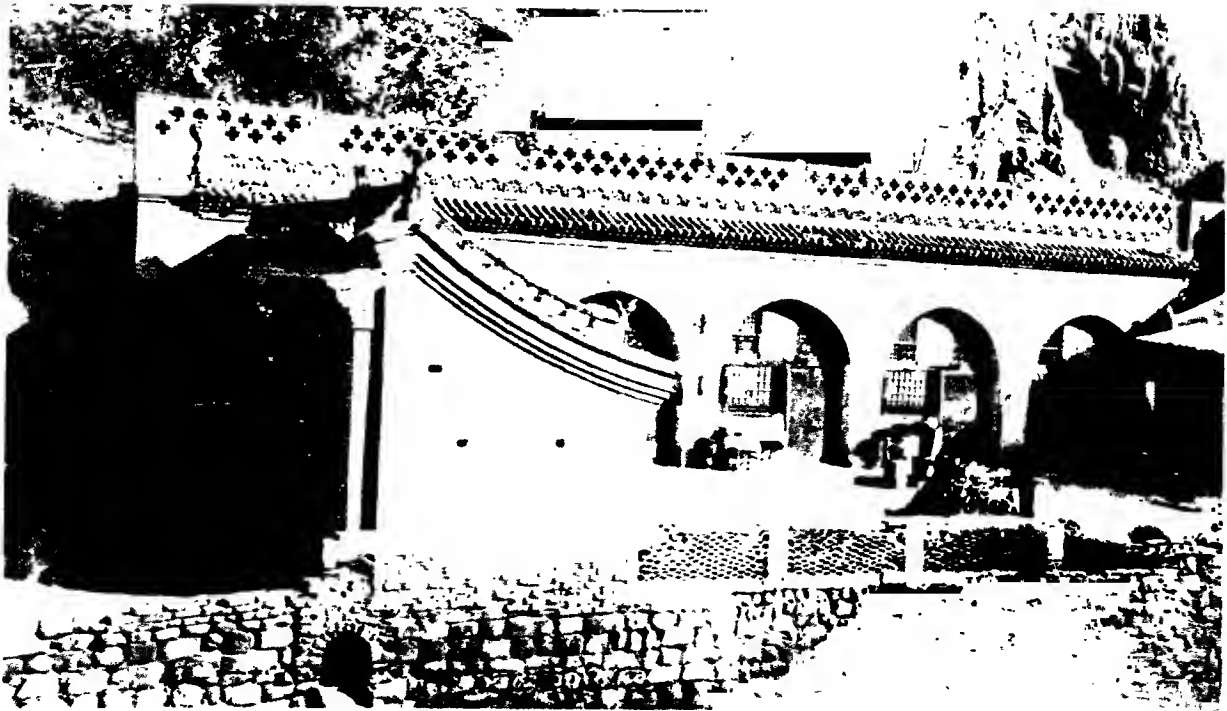
Phot. Karlbeck.

B. Typical brick building at Nan-k'ou village,
Western Shansi.

Phot. Karlbeck.



A



B

PLATE 54

A. The main building at Shuang-t'a ssü, T'ai-yuan fu.

Phot. O.S.

B. One of the side buildings at the same temple.

Phot. O.S.



A



B

PLATE 55

A. Interior view of the main building of Shuang-t'a ssü.

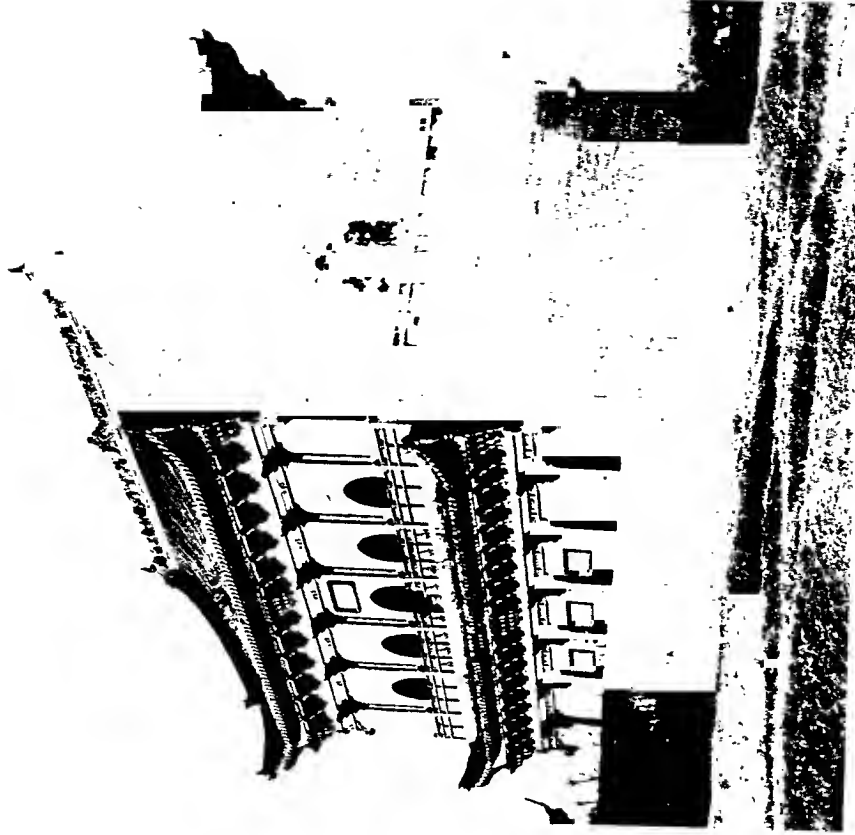
Phot. O.S.

B. Wu-liang tien, a brick building in Su-chou, Kiangsu.

Phot. O.S.



A



B

PLATE 56

A. Terraced tower at Chiu-wu, southern
Shansi.

Phot. Karlbeck.

B. Bell Tower at Paoto, Suiyuan.

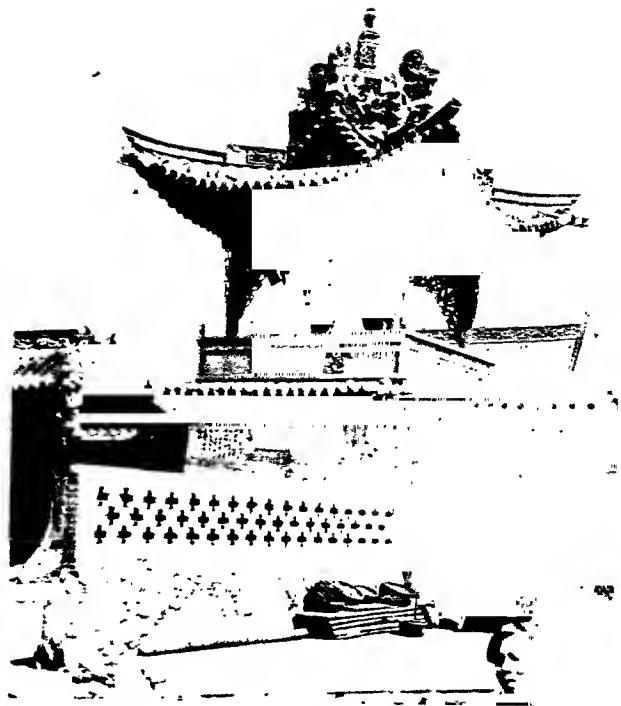
Phot. Karlbeck.

C. The entrance pavilion and defensive tower
of Shih-pei ssü, near Chiao-cheng, Shansi.

Phot. O.S.



A



B

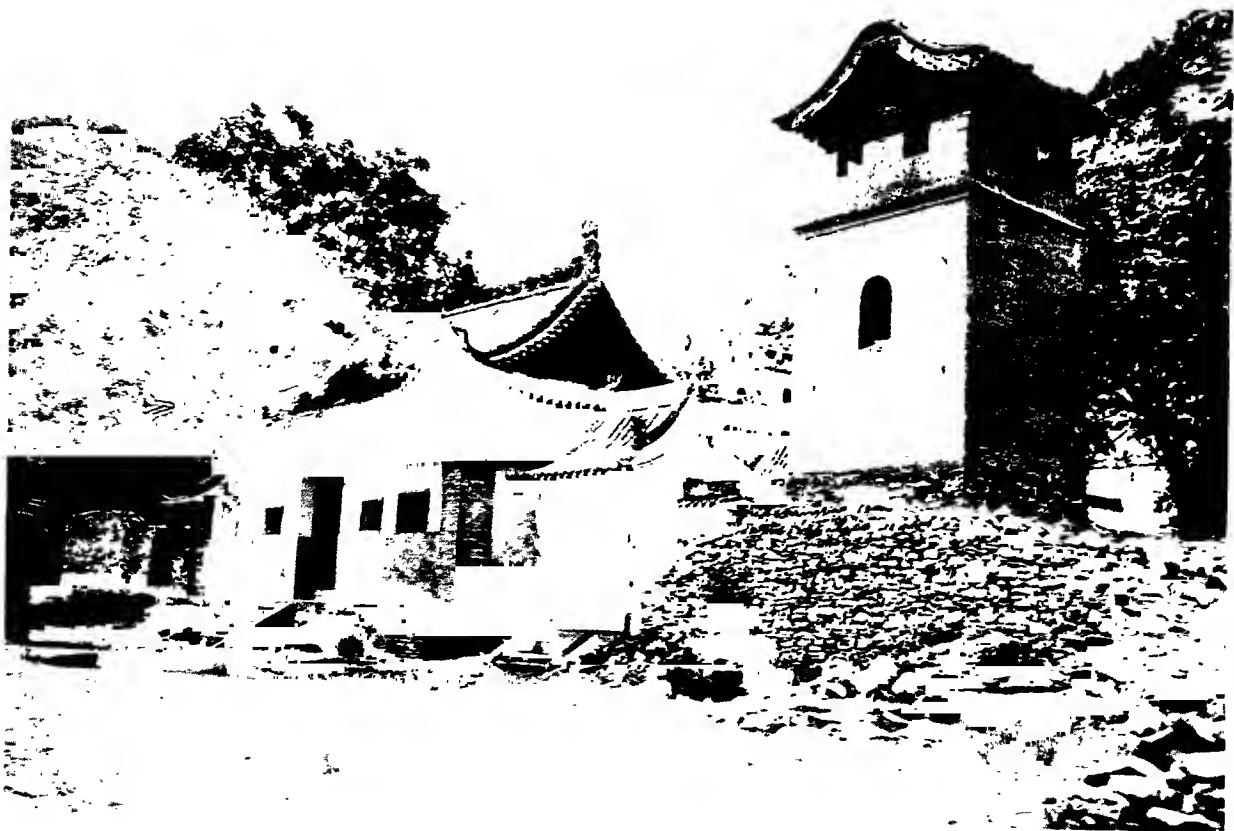


PLATE 57

Outer tower of P'ing-tzū mén, Peking.

Phot. O.S.

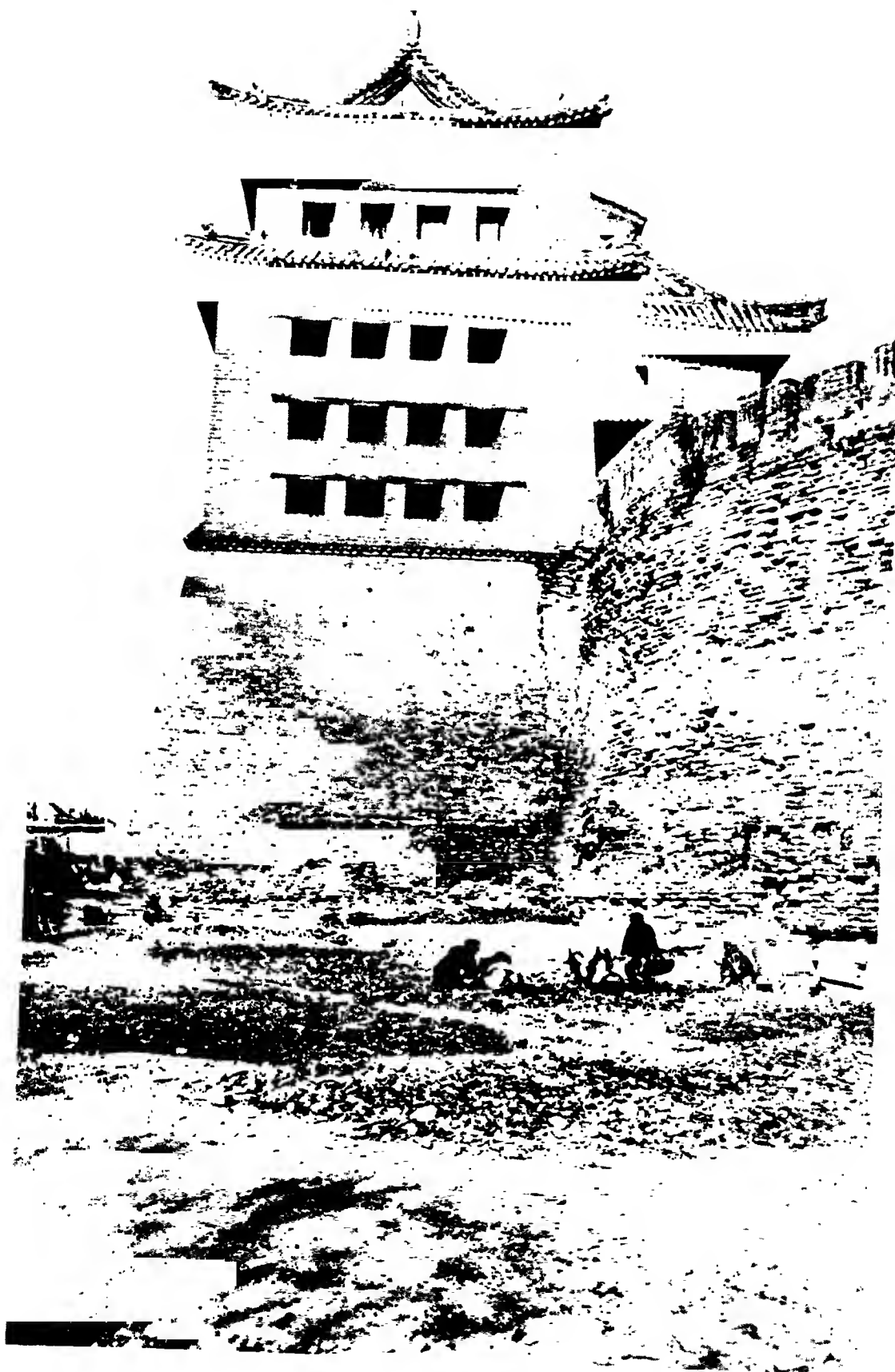


PLATE 58

- A. Outer view of P'ing-tzŭ mên, Peking. *Phot. O.S.*
B. General view of Yung-tung mên, Peking. *Phot. O.S.*

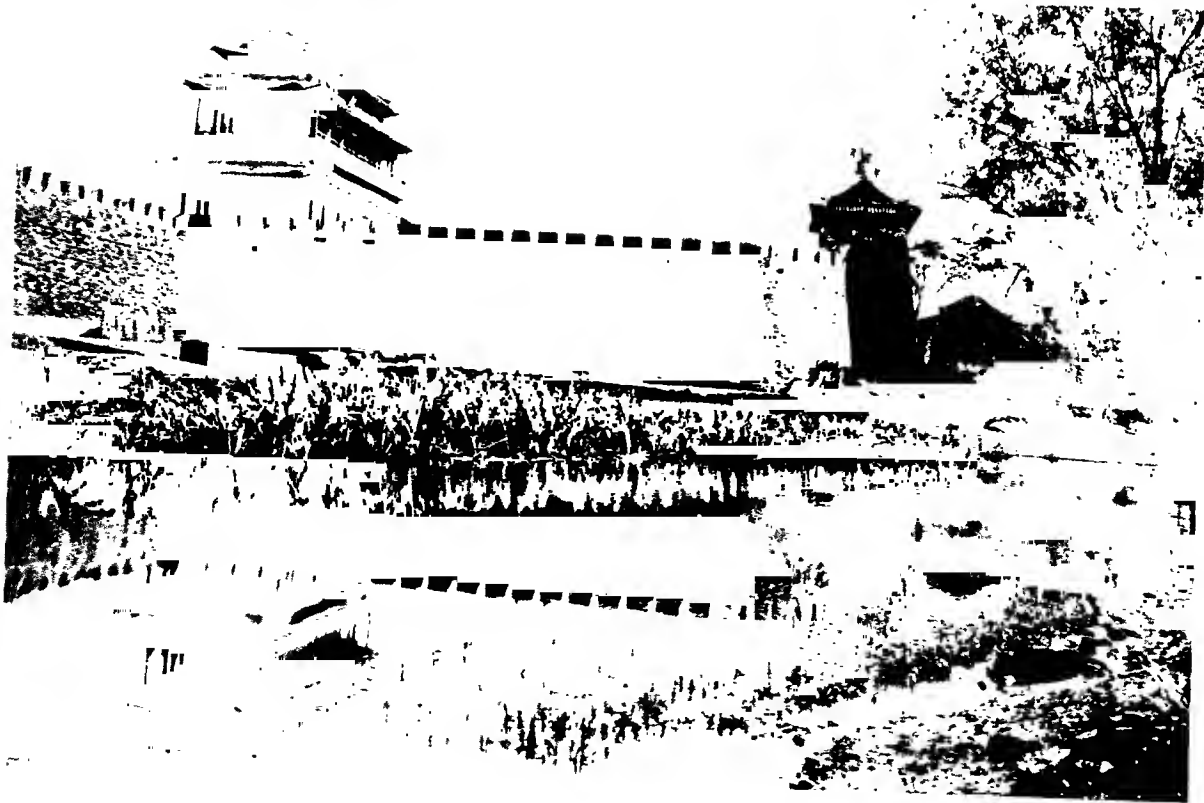
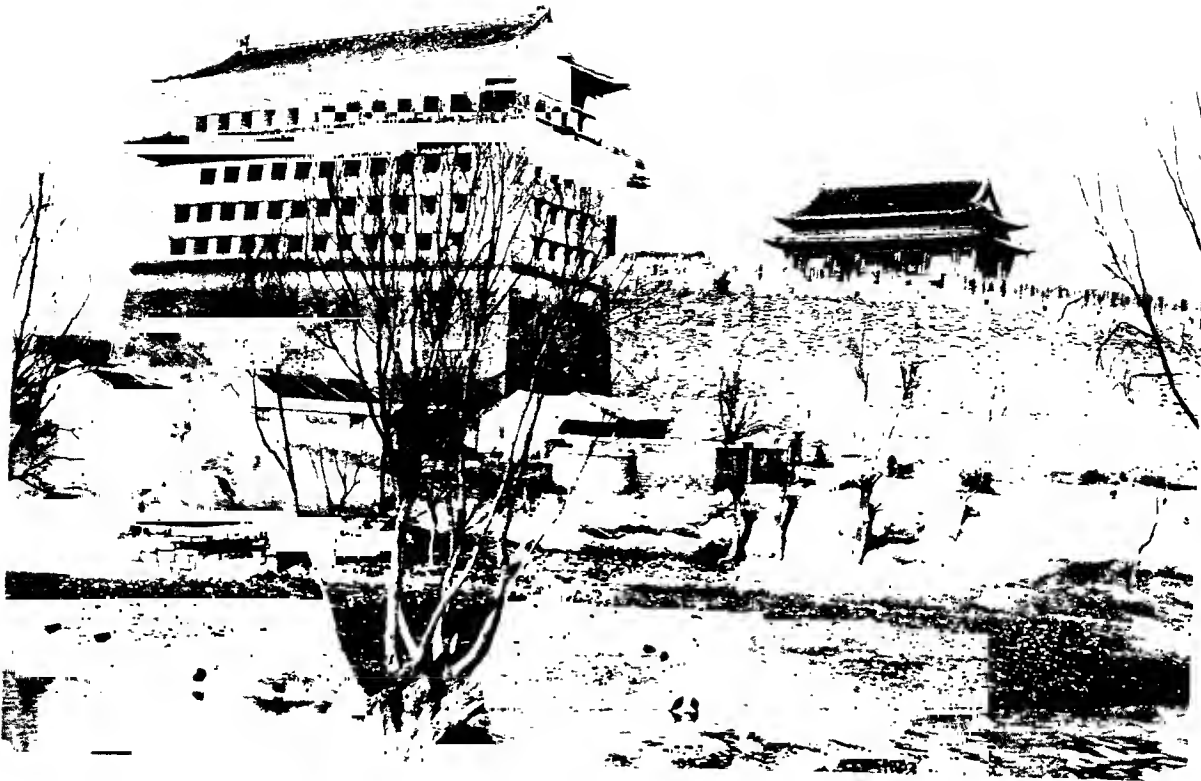


PLATE 59

The outer gate of Hsi-p'ien mén, Peking.

Phot. O.S.



PLATE 60

The inner gate of Ch'ien mén, Peking.

Phot. O.S.

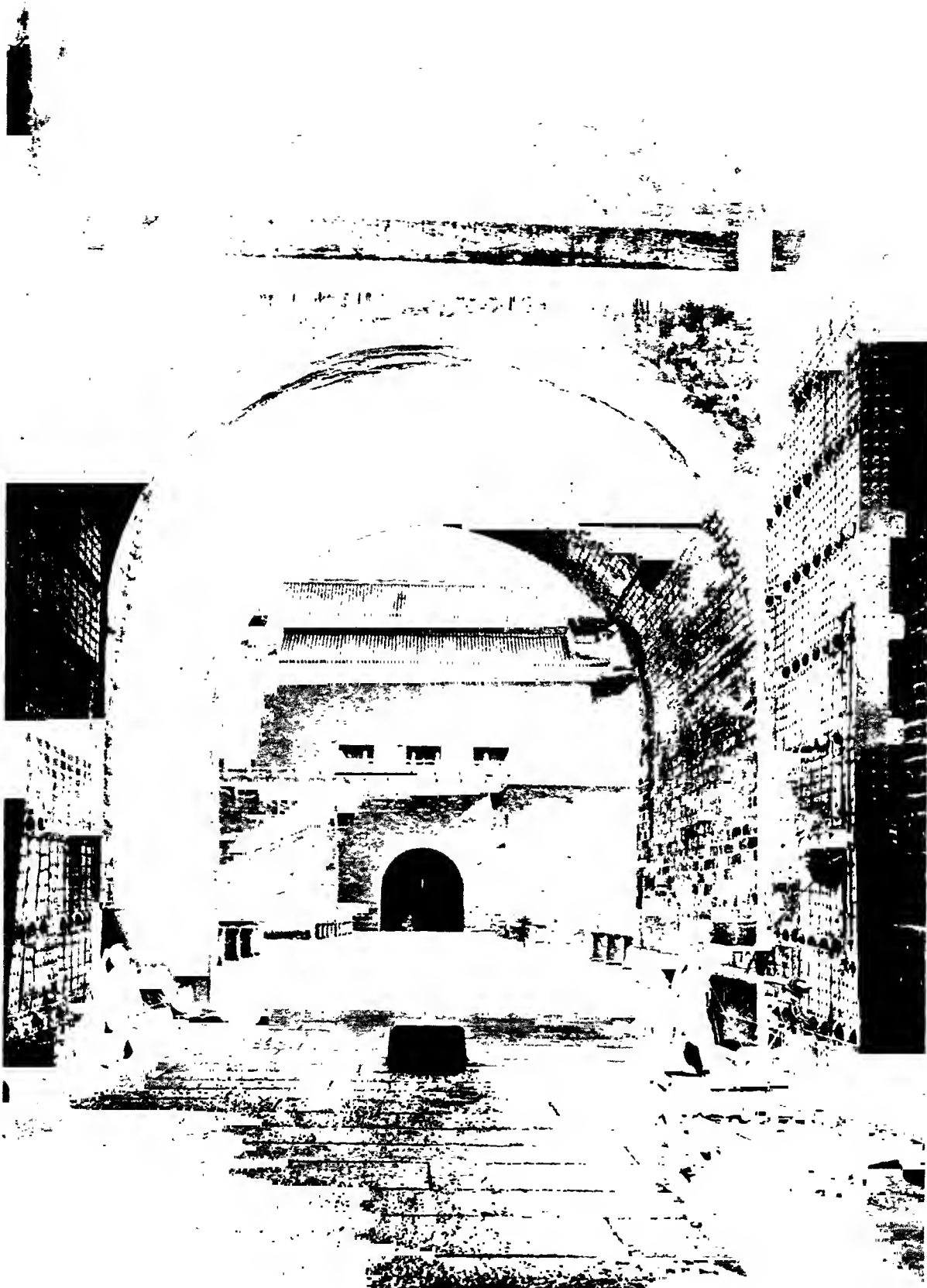


PLATE 61

A. The Bell Tower in Peking.

Phot. O.S.

B. The Drum Tower in Nanking.

Phot. O.S.



PLATE 62

The Drum Tower in Peking.

Phot. O.S.

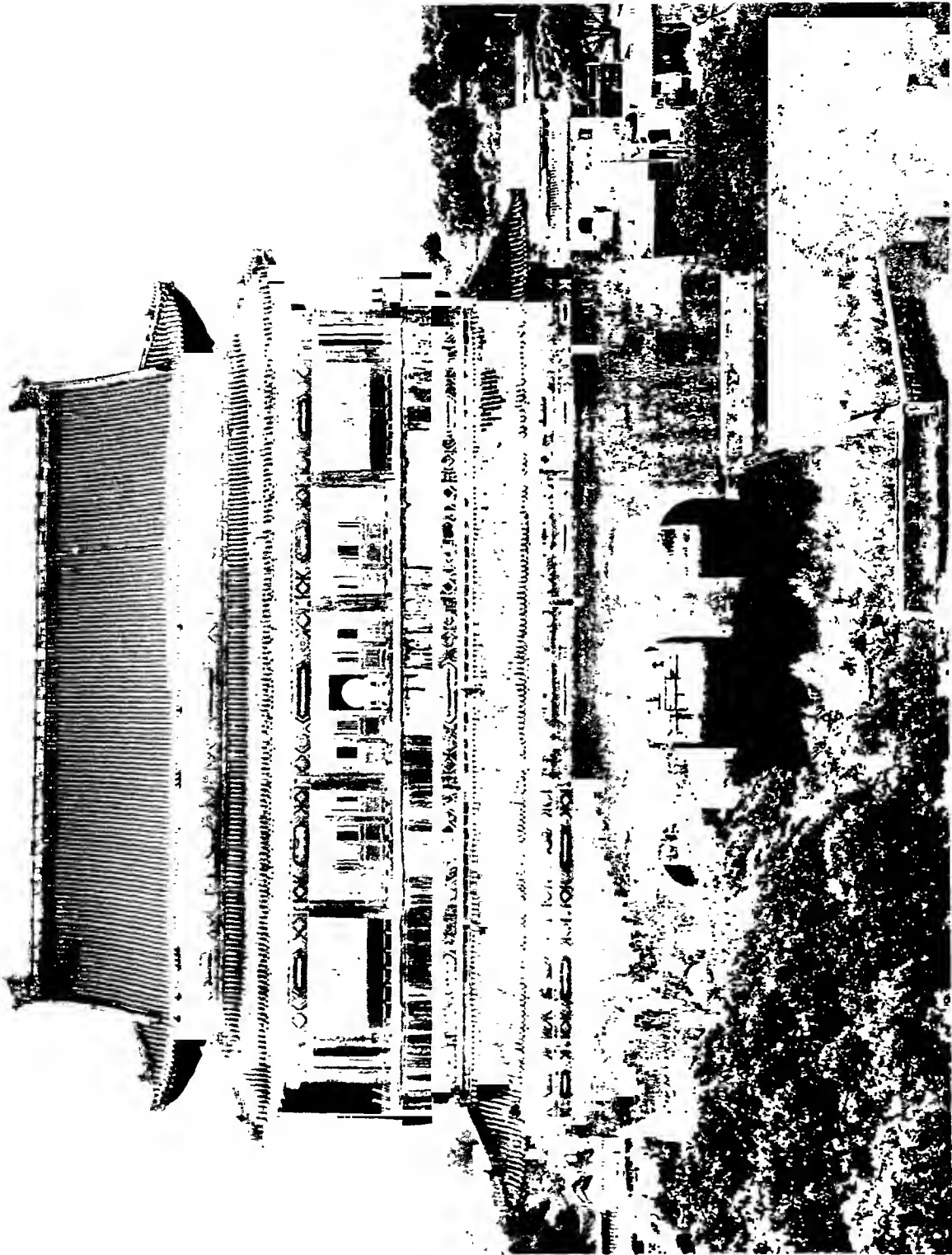


PLATE 63

The water-gate at Su-chou, Kiangsu.

Phot. O.S.



PLATE 64

A. General view of the Lama Monastery at
Jehol.

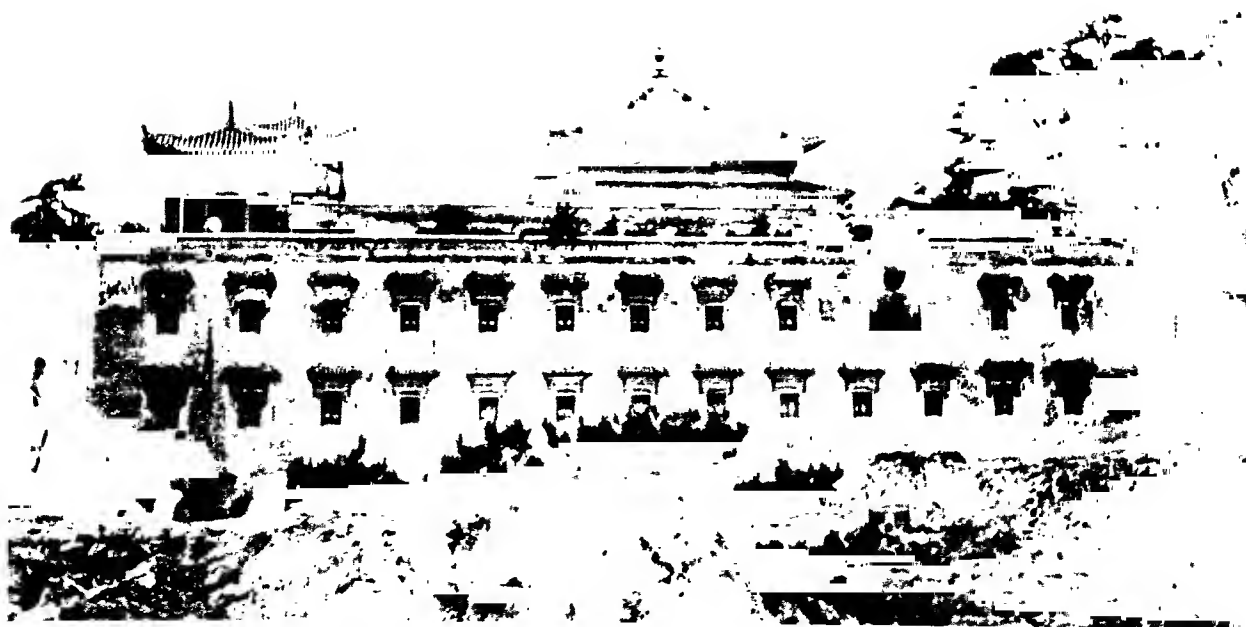
Phot. Hartung.

B. The main building of the Lama Monastery at
Jehol.

Phot. Hartung



A



B

PLATE 65

Ta yen t'a, a large brick pagoda, founded A.D.
652, Si-an fu, Shensi.

Phot. O.S.



PLATE 66

The lower portion of Hsiao yen t'a, south
façade (founded A.D. 684), Si-an fu, Shensi.
Phot. O.S.

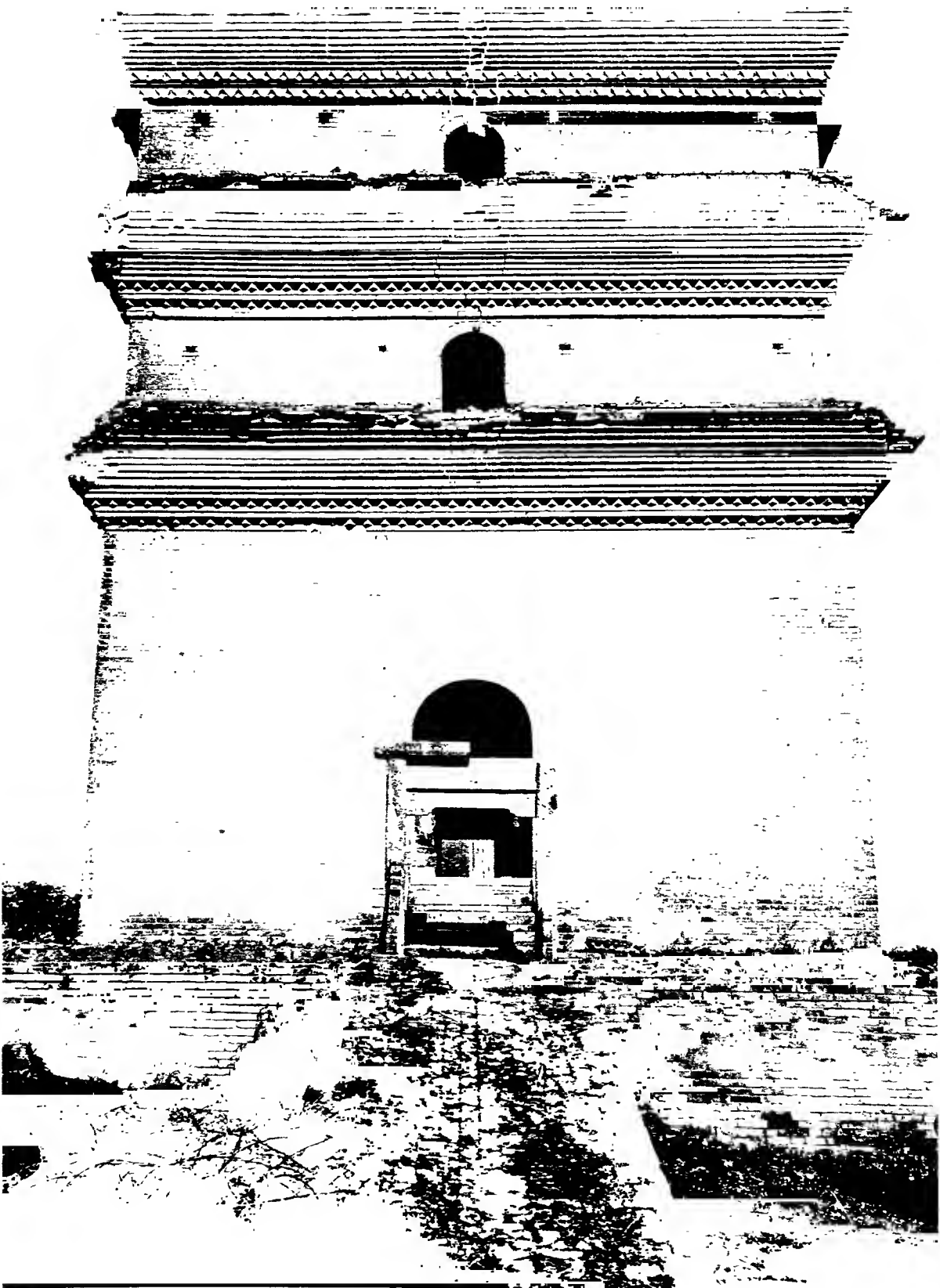
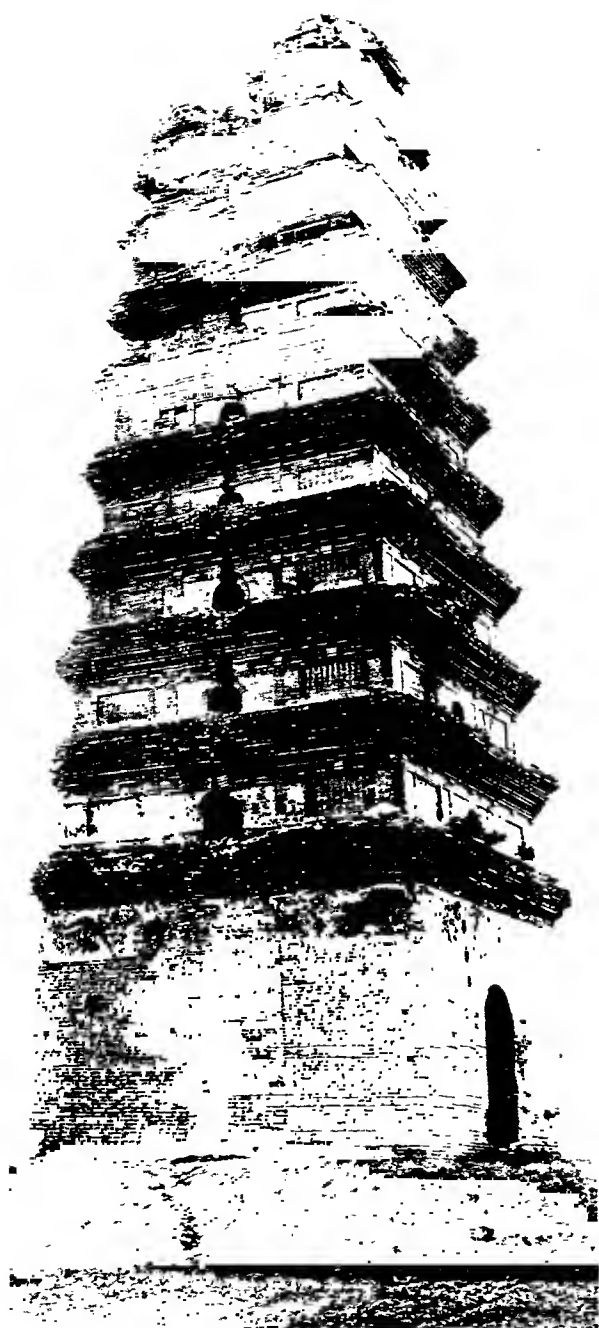


PLATE 67

- A. Pagoda of Hsiang Chi ssü (founded A.D. 681
or 706), near Si-an fu, Shensi. *Phot. Sekino.*
- B. One of the two pagodas at Hsing chiao ssü,
erected over the tomb of Hsuan-tsang (9th
century), near Si-an fu. *Phot. Sekino.*



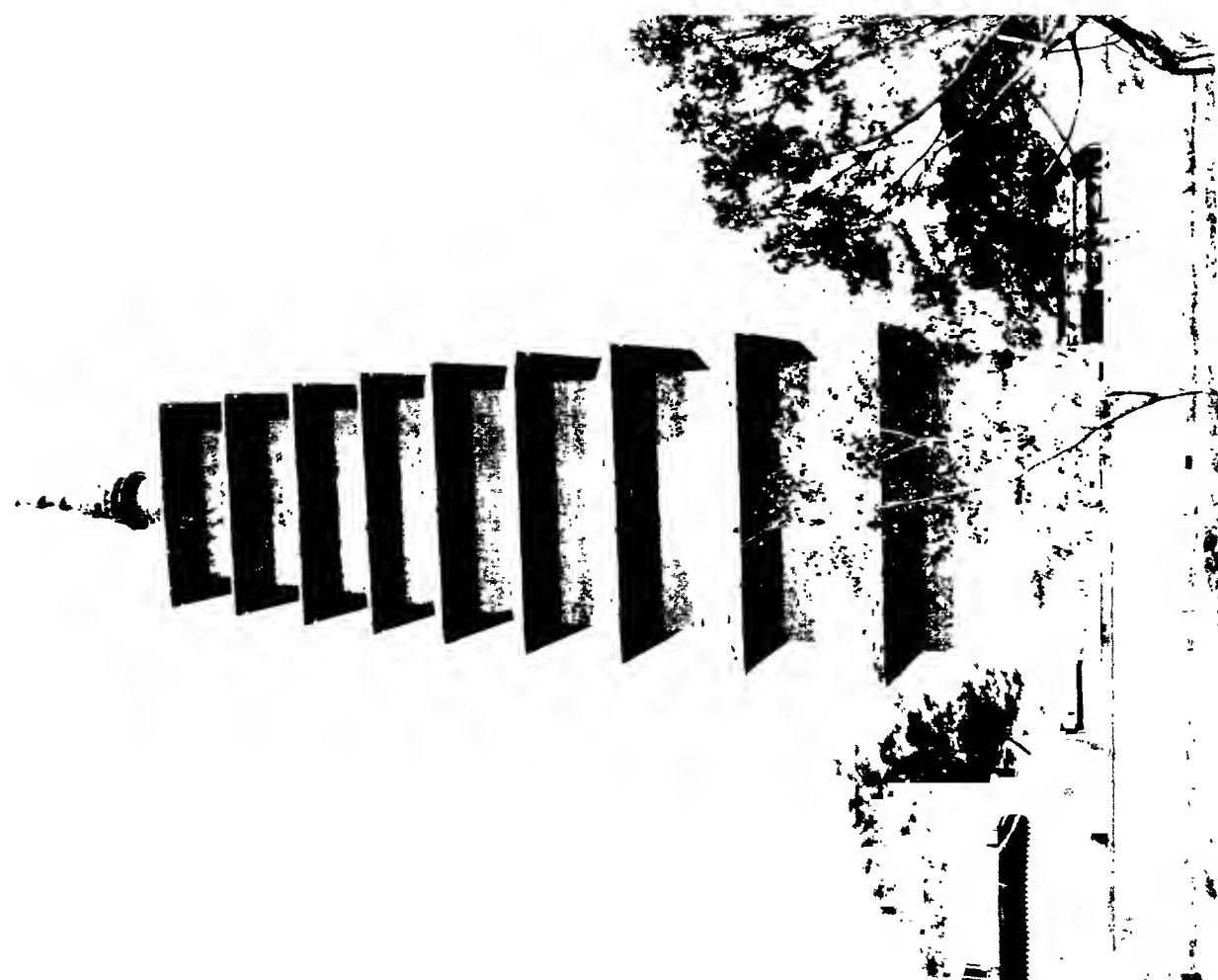
A



B

PLATE 68

- A. The pagoda of K'ai-yuan ssü, Cheng-tung fu. *Phot. O.S.*
- B. The Pai t'a pagoda, south of Si-an fu. *Phot. O.S.*



A



B

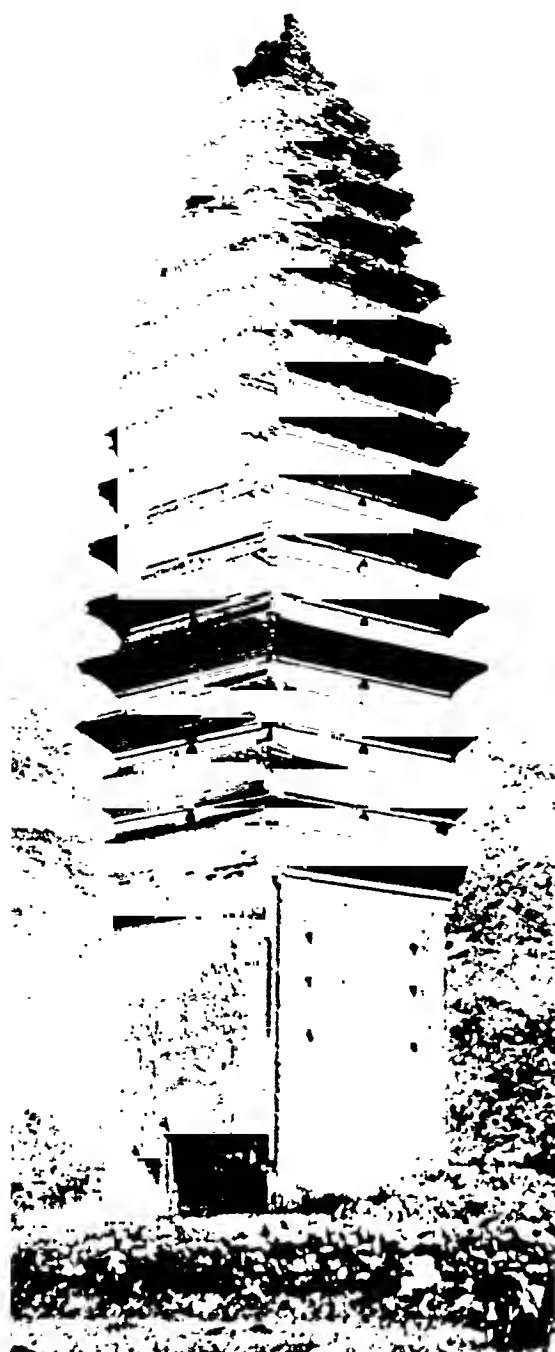
PLATE 69

- A. The square fifteen-storeyed pagoda of
Fang-wang ssüan, Sung chan, Honan
(T'ang period).

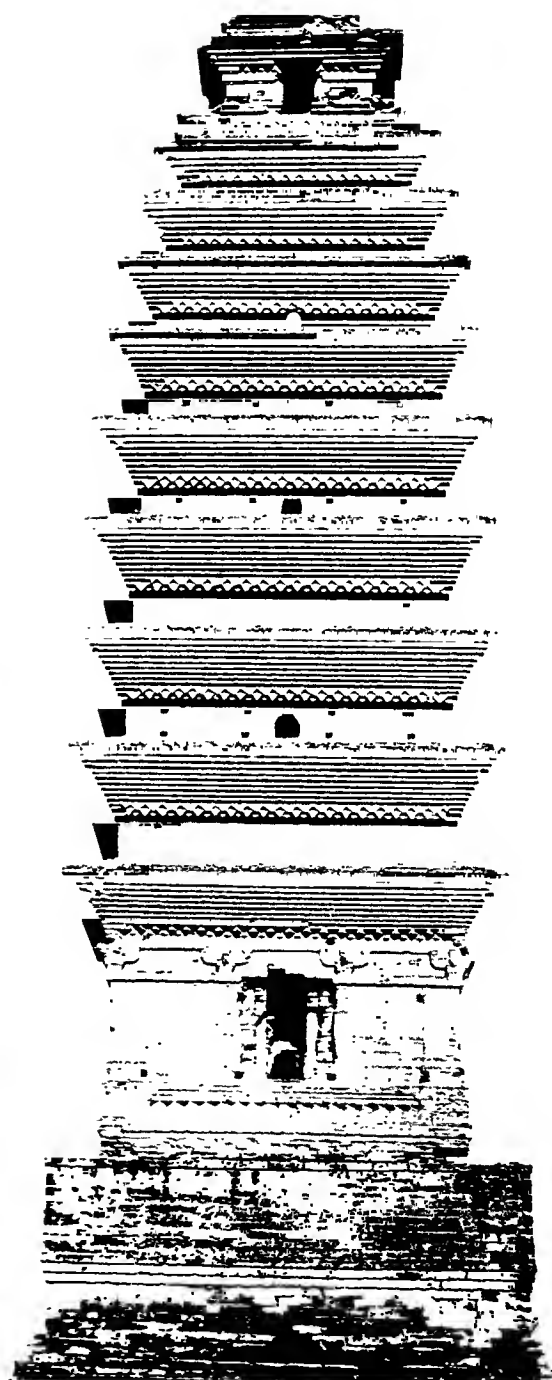
Phot. O.S.

- B. The thirteen-storeyed pagoda of Pai-ma ssü,
near Honan fu (A.D. 1175).

Phot. O.S.



A



B

PLATE 70

Chiu t'a ssü, Lin-ch'eng hsien, Shantung (T'ang
period).

Phot. O.S.



PLATE 71

The Octagonal pagoda at Chung-hsing ssü, Tso-
hsien, Shantung (late T'ang period). *Phot. O.S.*

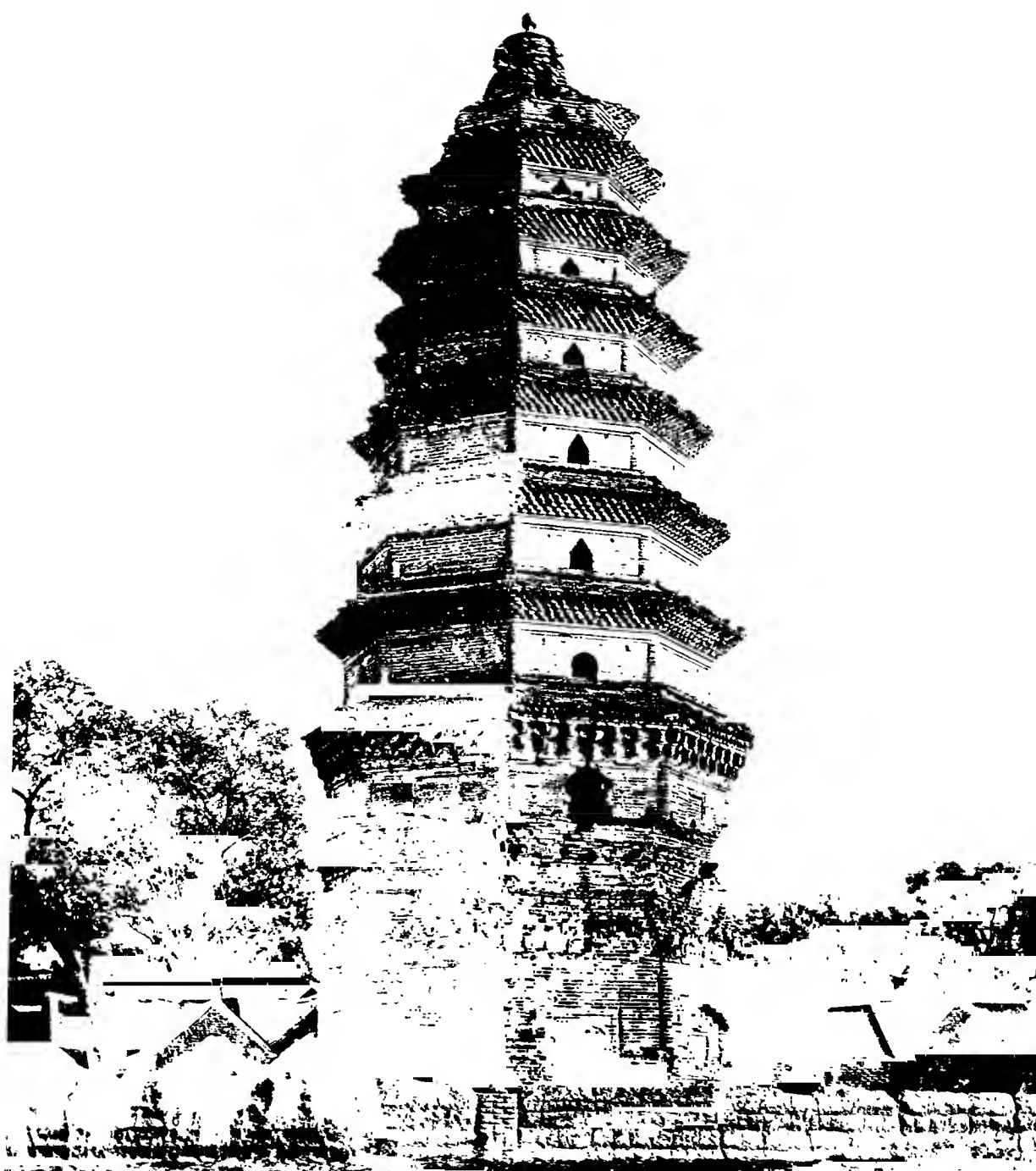


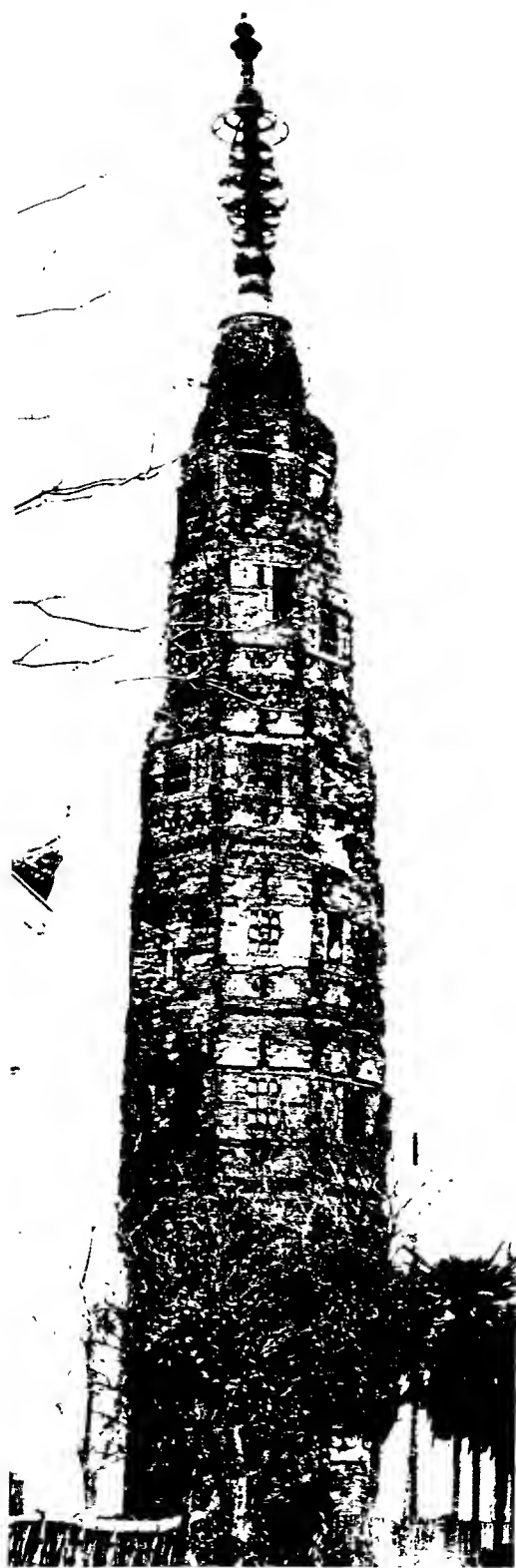
PLATE 72

A. The Pao-shu t'a pagoda, Hang-chou.

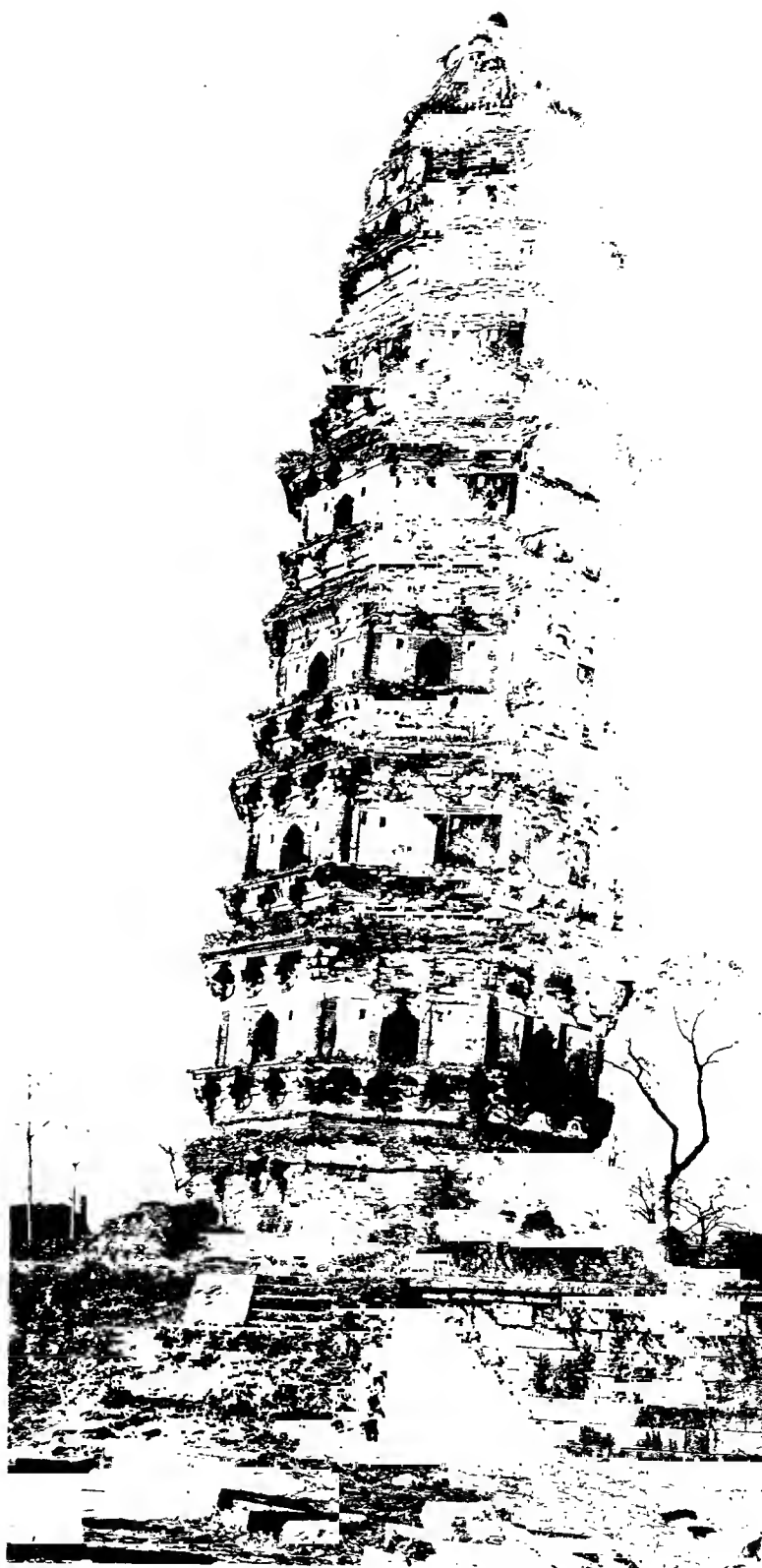
Phot. O.S.

B. The Tiger Hill pagoda, Su-chou.

Phot. O.S.



A



B

PLATE 73

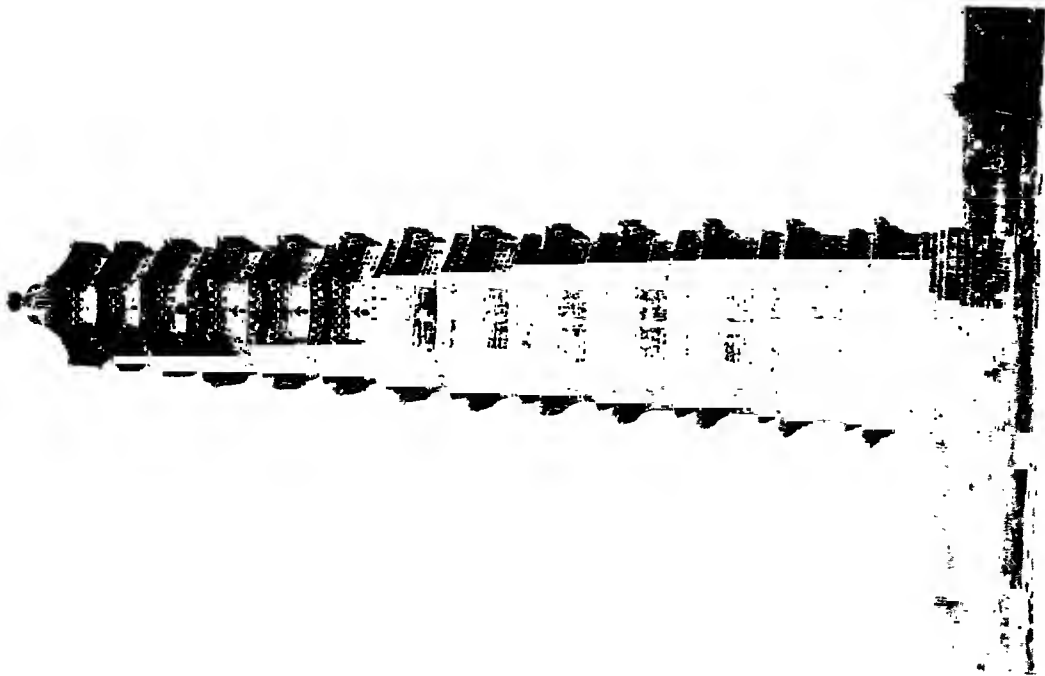
A. The so-called Iron pagoda, T'ieh t'a, K'ai-fêng.

Phot. O.S.

B. Lower portion of the same building.



B

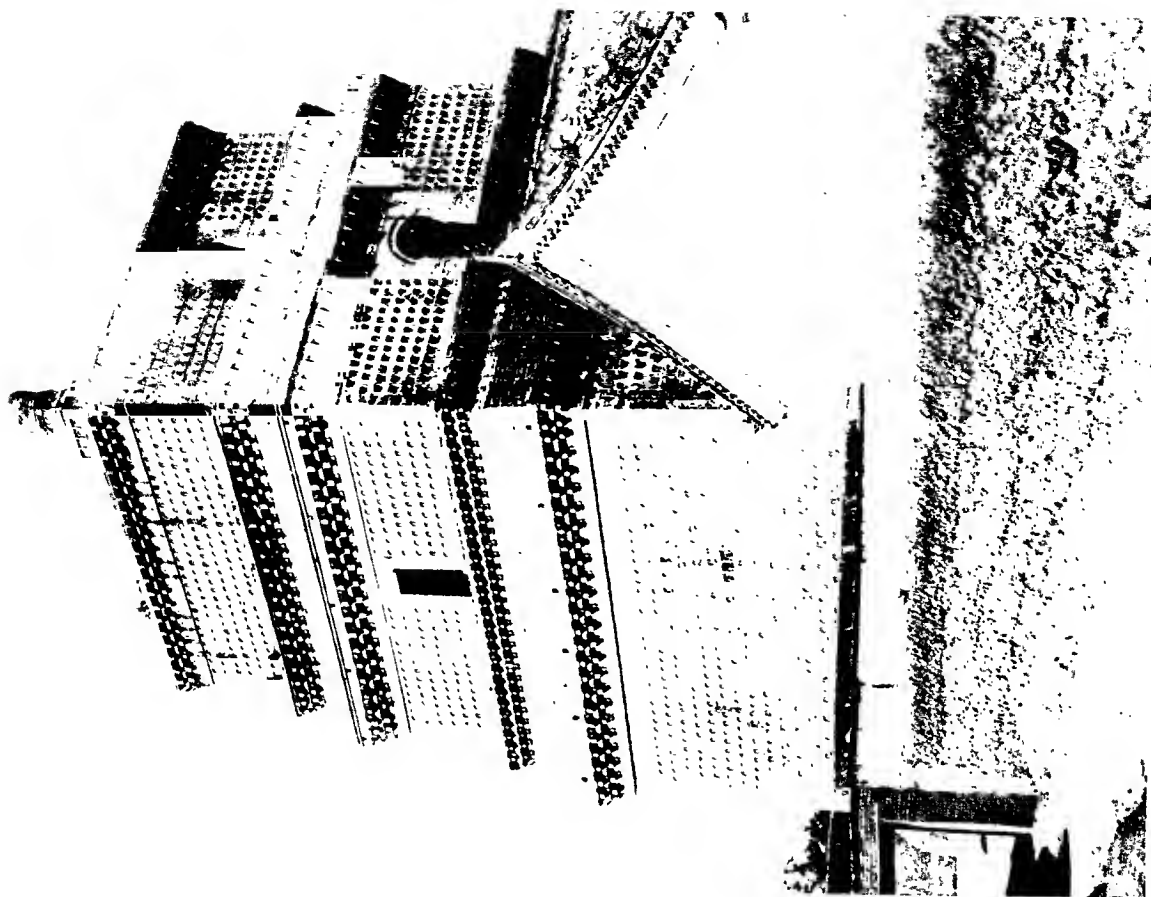


A

PLATE 74

A, B. The Fan t'ia of Kuo-hsiang 郭向, K'ai-
teng.

Phot. O.S.



A



B

PLATE 75

Pei t'a at Fang-shan hsien, Chihli (T'ang
period).

Phot. O.S.



PLATE 75

Nan t'a at Fang-shan, Chihli (Liao period,
A.D. 1117).

Phot. O. S.

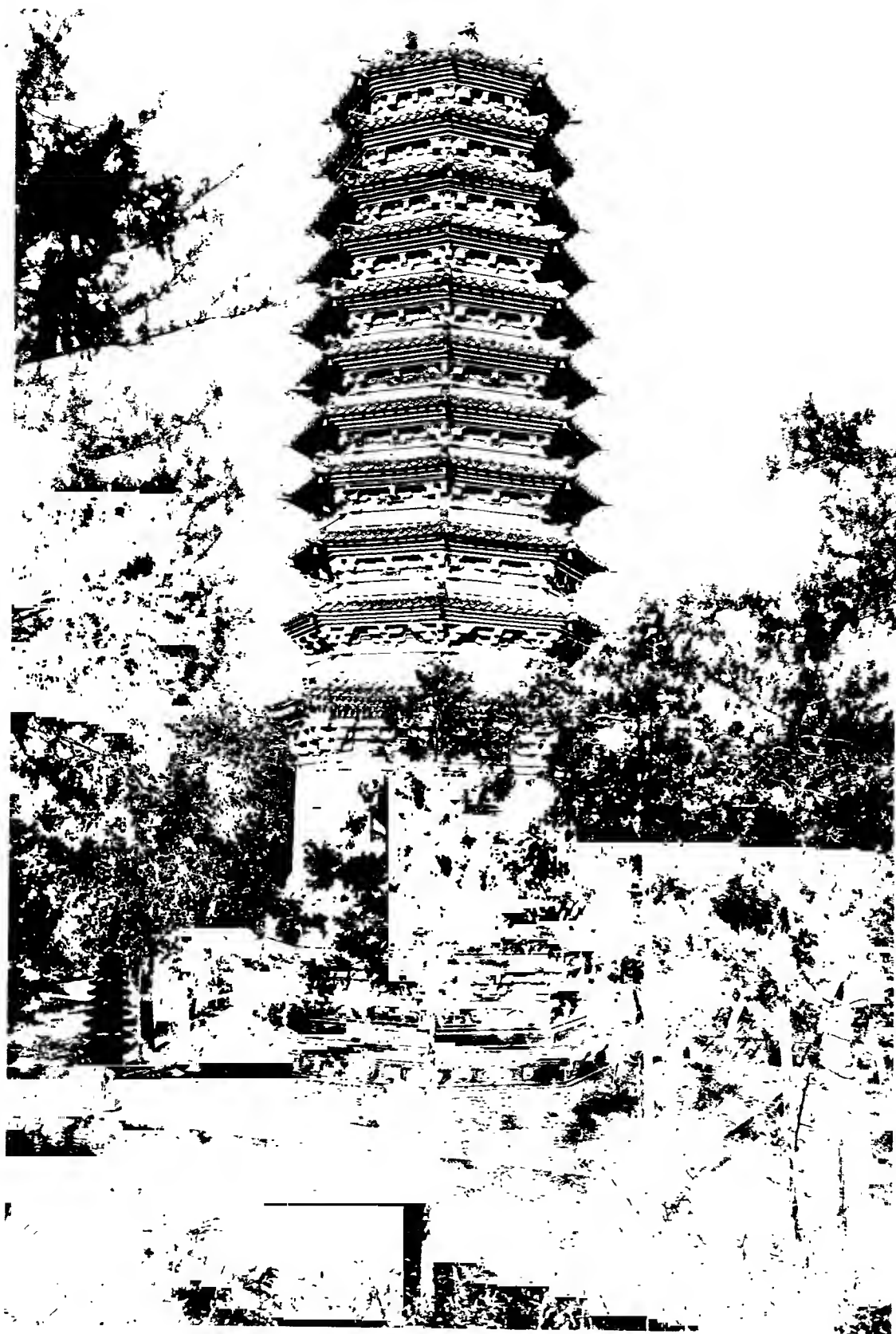


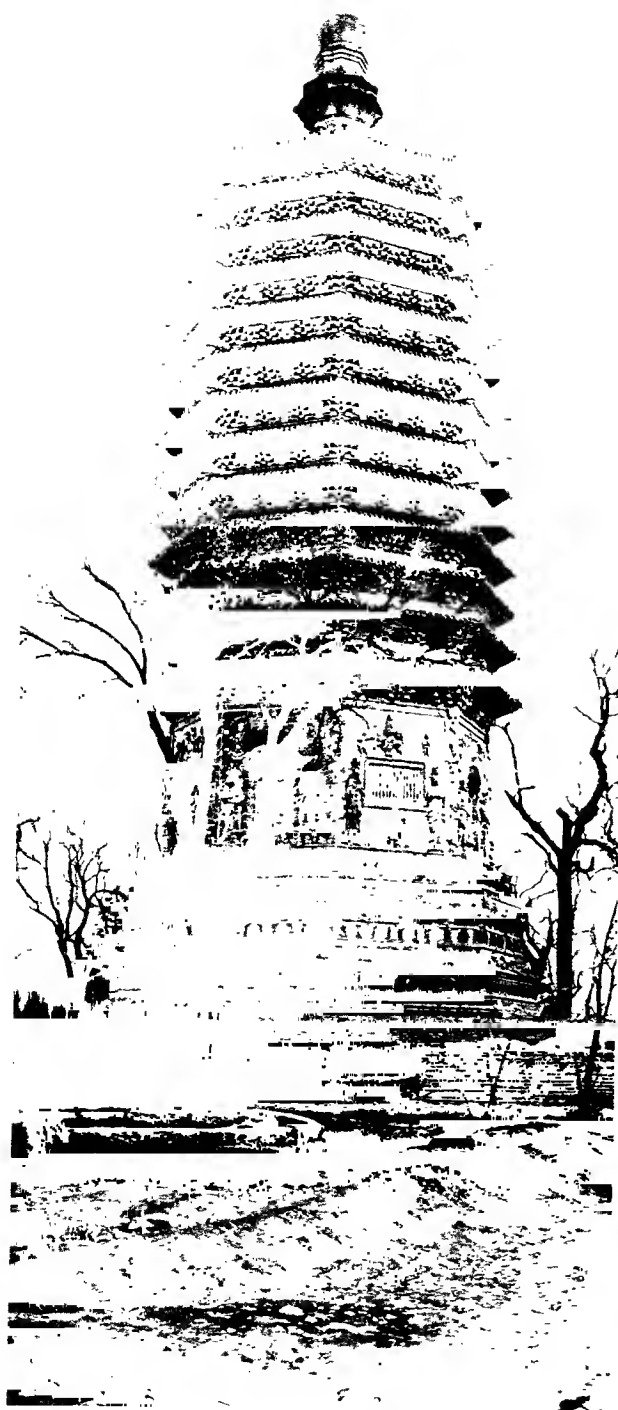
PLATE 77

A. The octagonal brick pagoda of T'ien-ning
ssu, Peking (Liao dynasty).

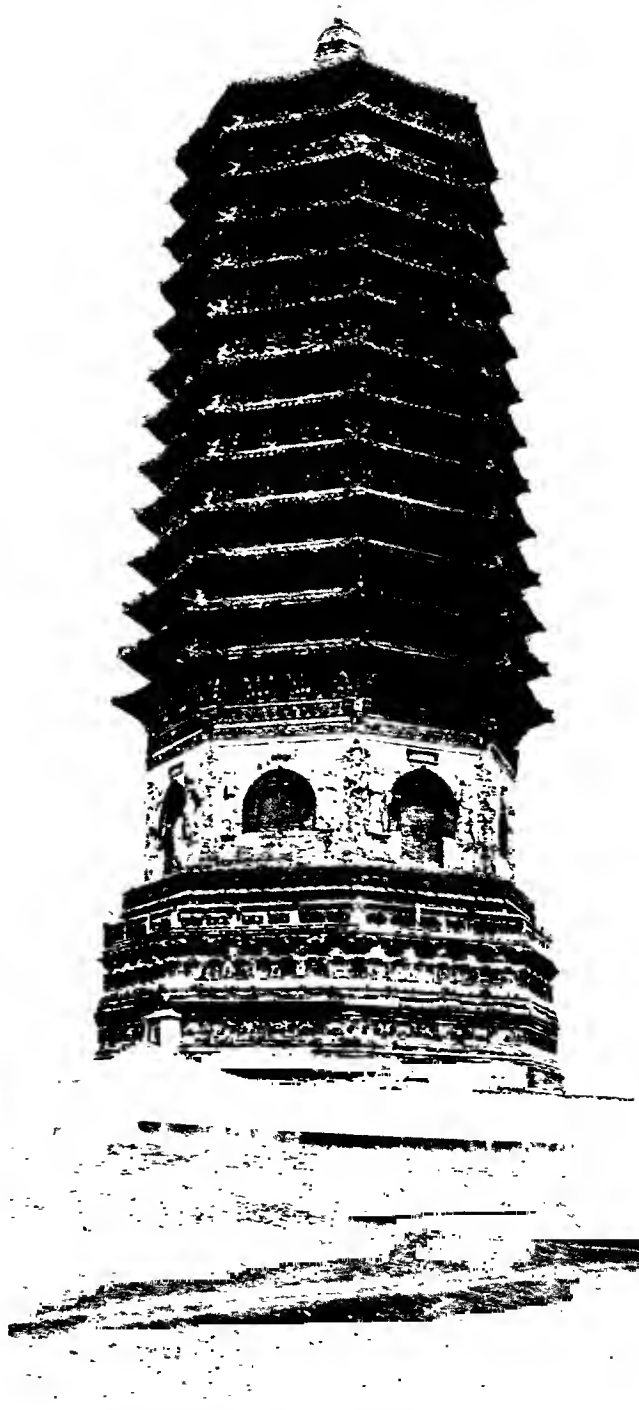
Phot. O.S.

B. The pagoda of Pa-li-chuan, near Peking
(Yuan dynasty).

Phot. O.S.



A

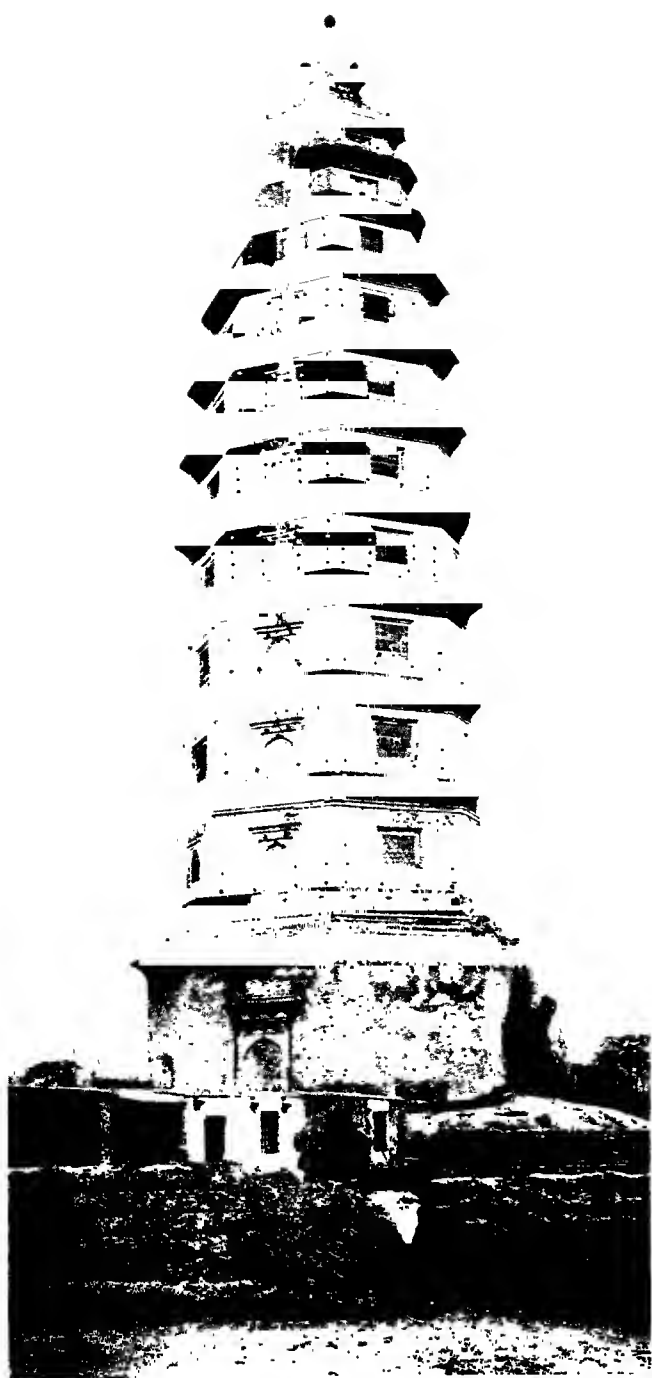


B

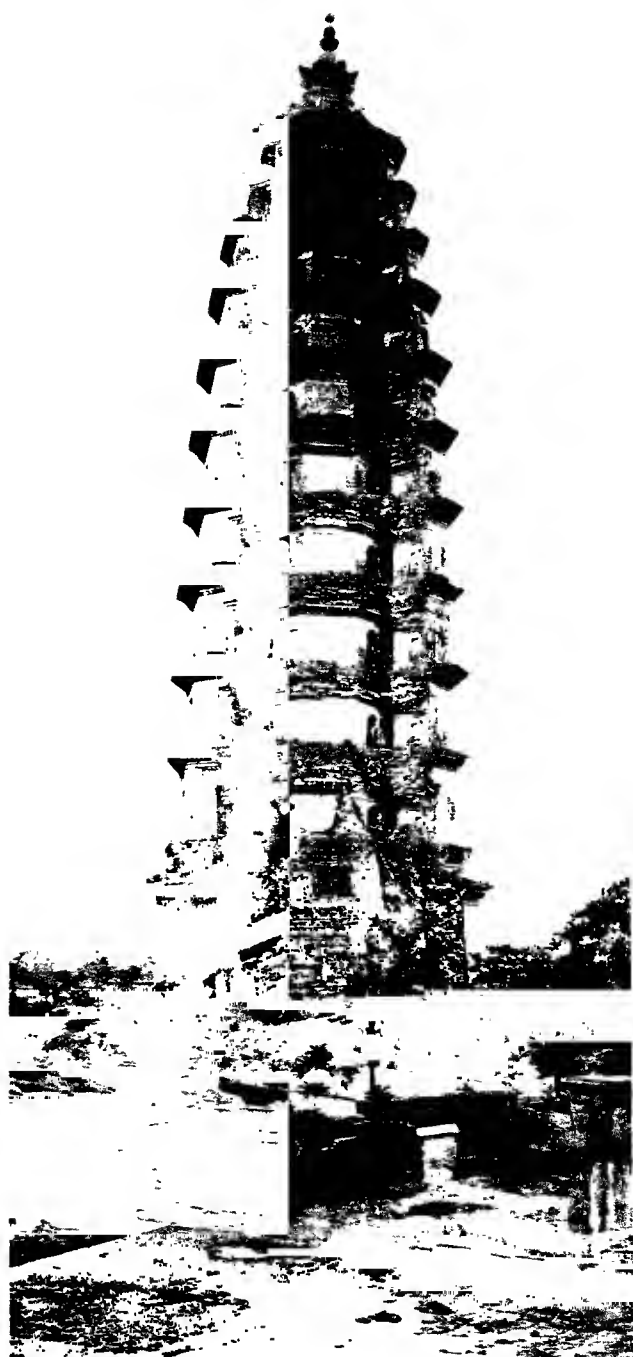
PLATE 78

A, B. Two views of the pagoda at Ting-chou,
Chihli.

Phot. O.S.



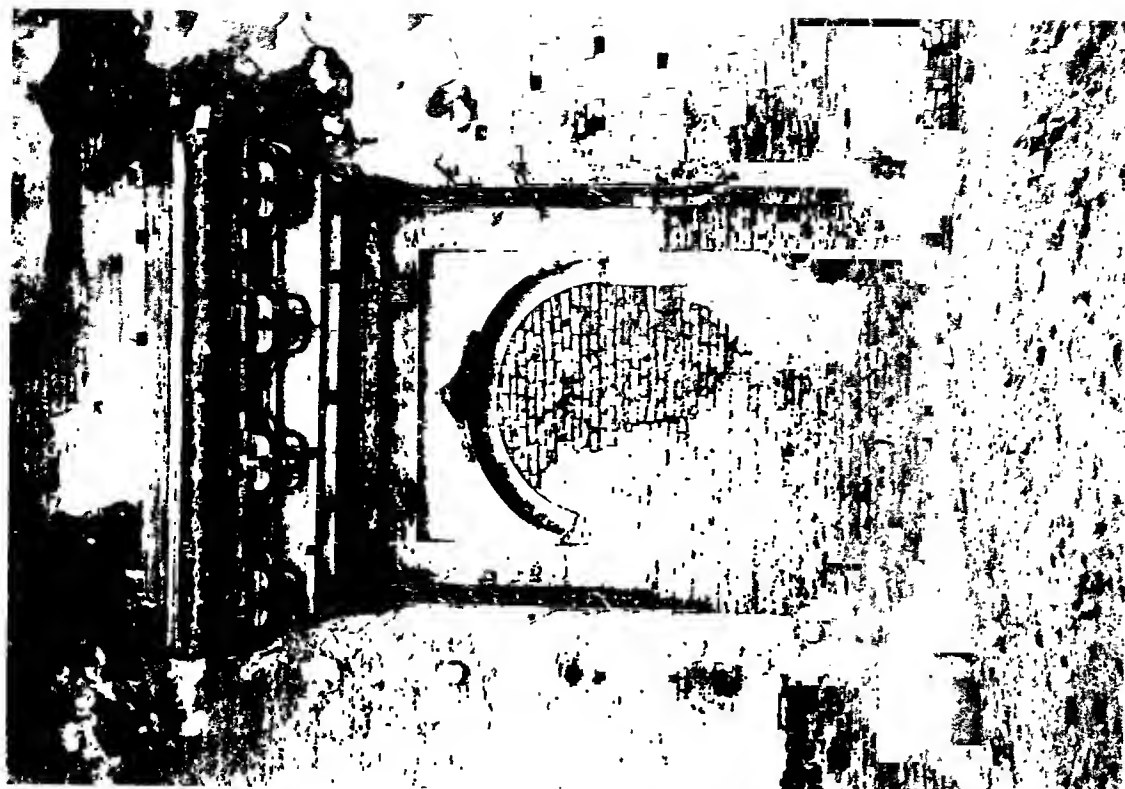
A



B

PLATE 79

- A. Lower portion of the pagoda at Ting-chou,
showing the piece which has slid down. *Phot. O.S.*
- B. The doorway of the pagoda at Ting-chou. *Phot. O.S.*



B



A

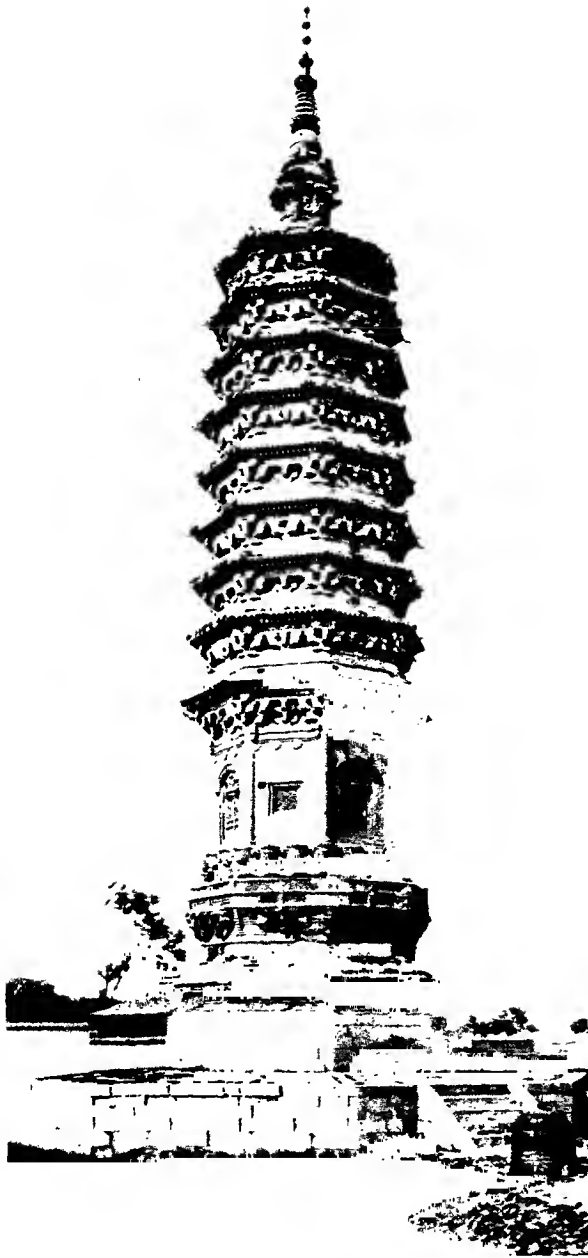
PLATE 80

A. The Ch'ing t'a of Lin-chi ssú, Cheng-tung
fu.

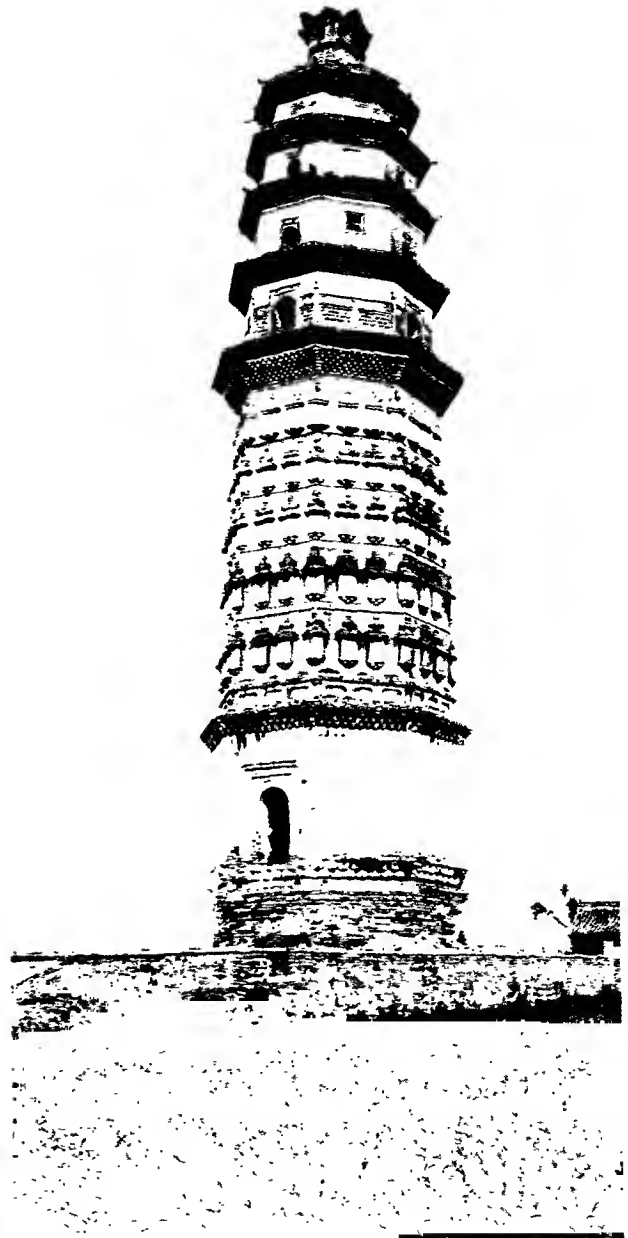
Phot. O.S.

B. The large pagoda at Ch'u-yang hsien, Chihli.

Phot. O.S.



A



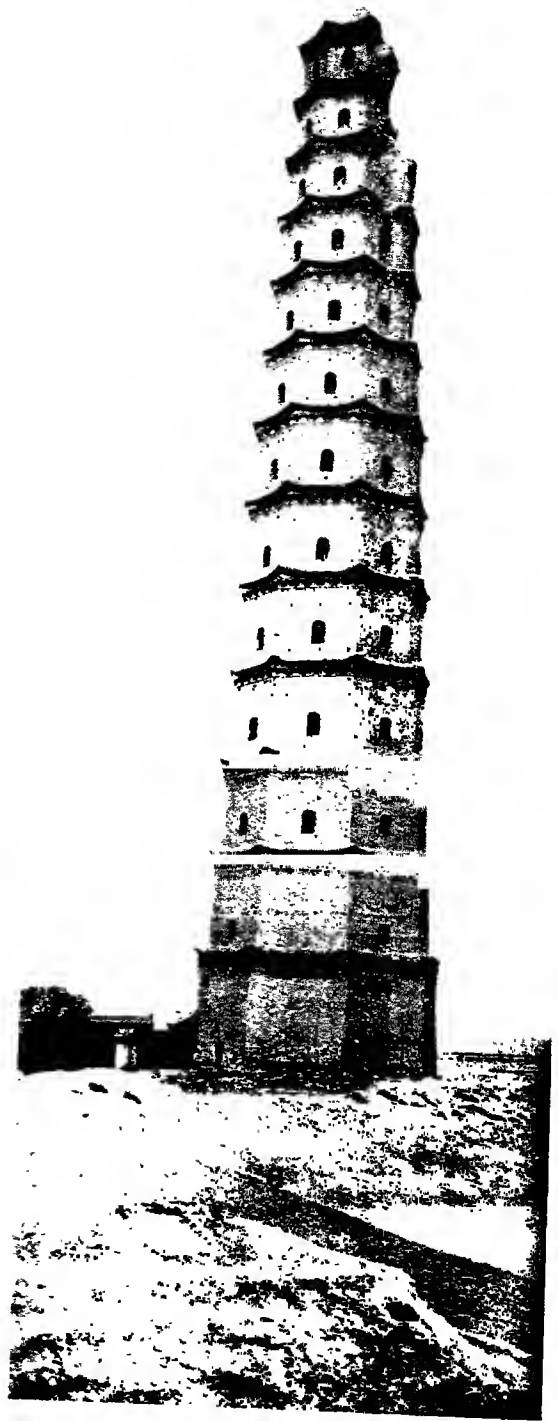
B

PLATE 81

- A. The two pagodas of Shuang-t'a ssü, T'ai-yuan fu. *Phot. O.S.*
- B. The great pagoda at Fên-chou fu, Shansi. *Phot. O.S.*



A



B

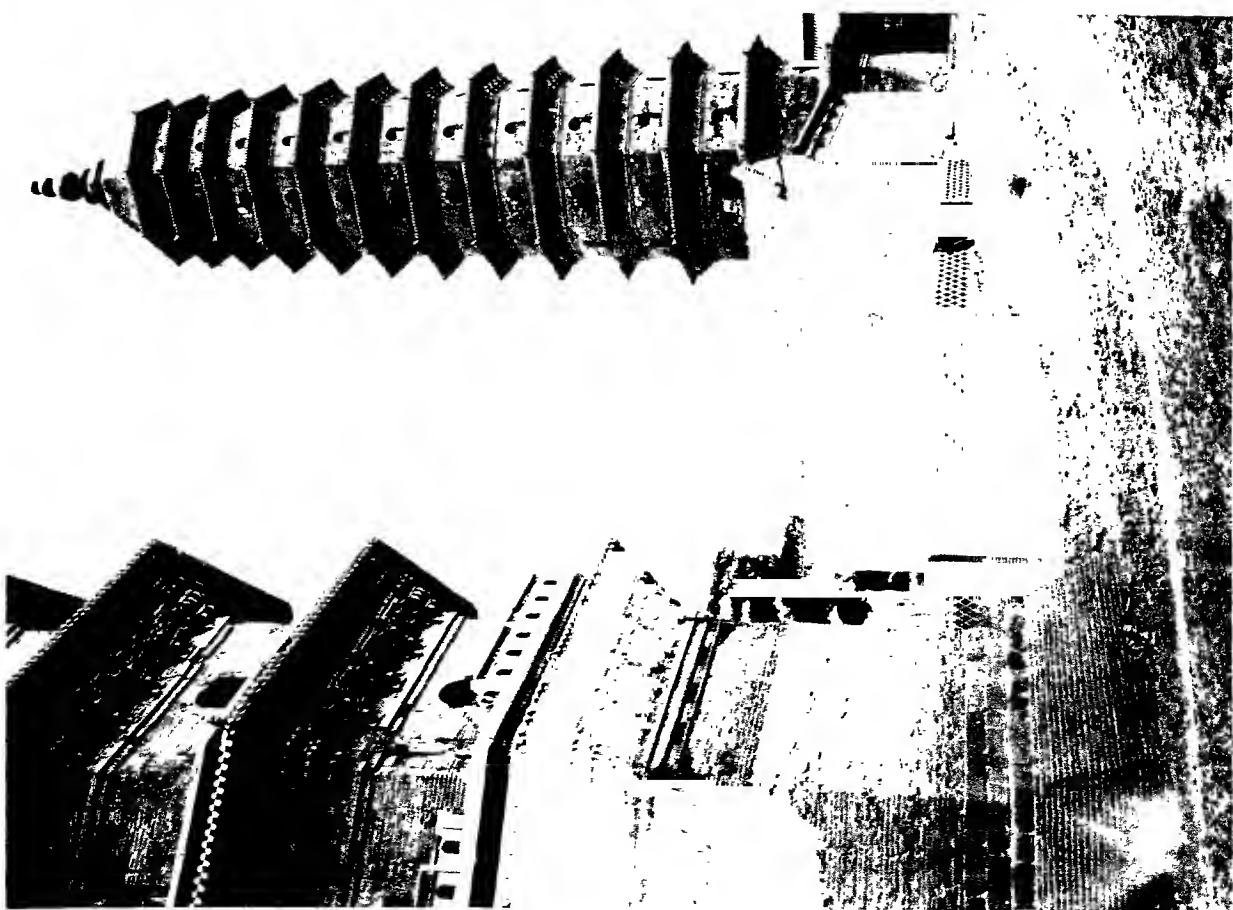
PLATE 82

A. A closer view of the two pagodas of Shuang-t'a ssü, T'ai-yuan fu.

Phot. O.S.

B. Interior view at the third storey of the pagoda at Fên-chou fu.

Phot. O.S.



A



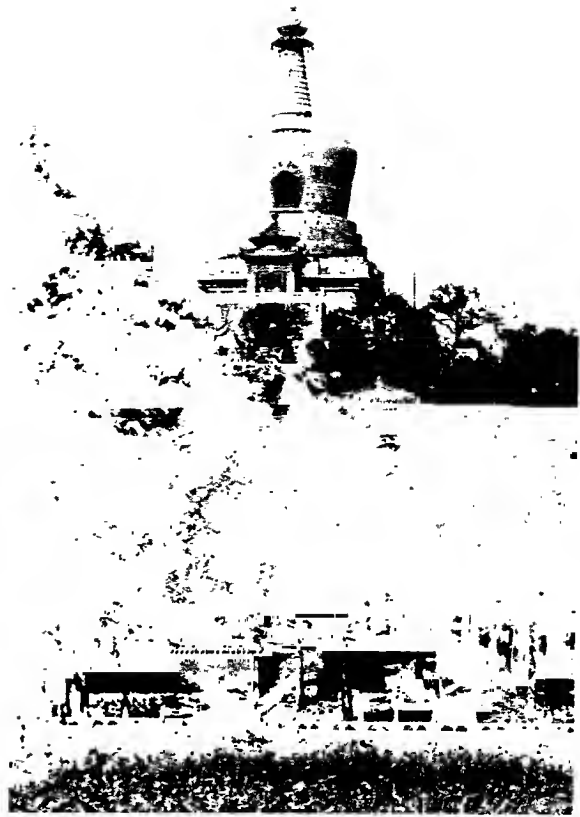
B

PLATE 83

- A. The Pai t'a of Miao-ying ssü, Peking.
Phot. Hartung.
- B. The Pai t'a in Pei hai, Peking.
Phot Hartung.
- C. The Indian pagoda at the Yellow Temple,
Peking.
Phot. Hartung



A



B



C

PLATE 84

A. Chen-kuo t'a, the Eastern pagoda at Ch'uan-chou, Fukien.

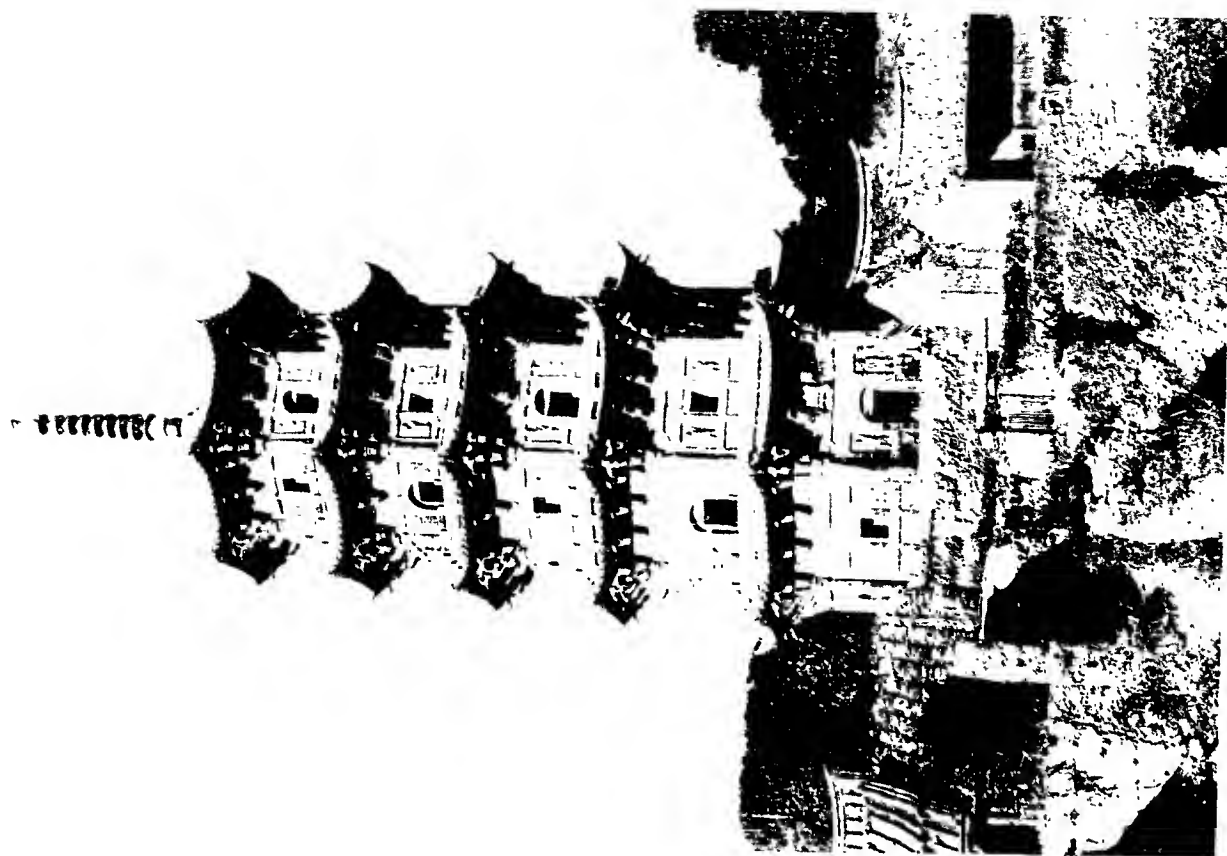
Phot. Dr. Ecke.

B. Jen-shou t'a, the Western pagoda at Ch'uan-chou, Fukien.

Phot. Dr. Ecke.



A



B

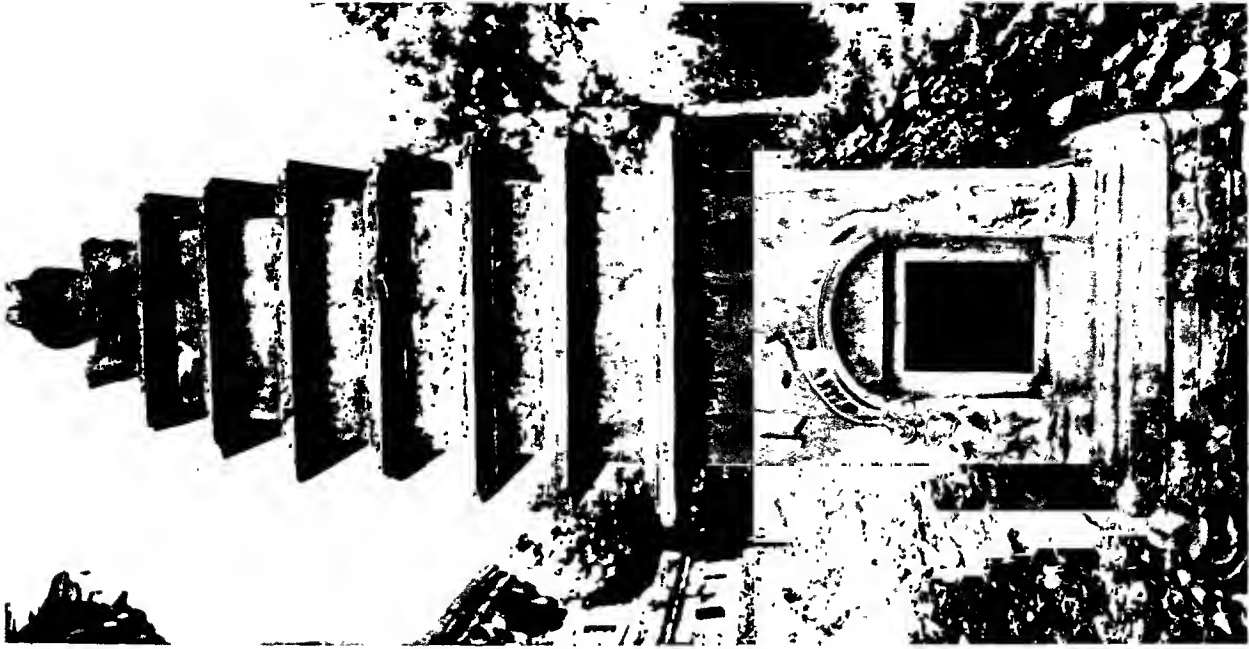
PLATE 85

- A. Small stone pagoda at Fang-shan hsien,
Chihli (T'ang period).

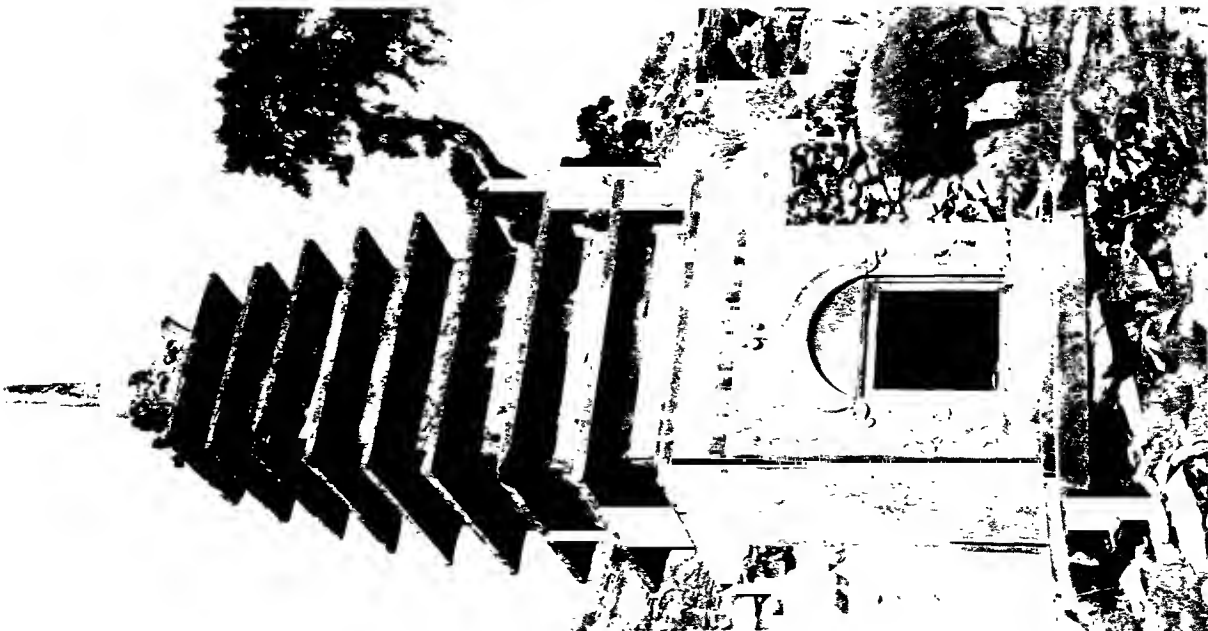
Phot. O.S.

- B. One of the four small stone pagodas at Pei
t'a, Fang-shan hsien (A.D. 722).

Phot. O.S.



B



A

PLATE 86

The richly sculptured stone pagoda, Lung-
hua t'a, at Shen-t'ung ssü (end of T'ang
period).

Phot. O.S.

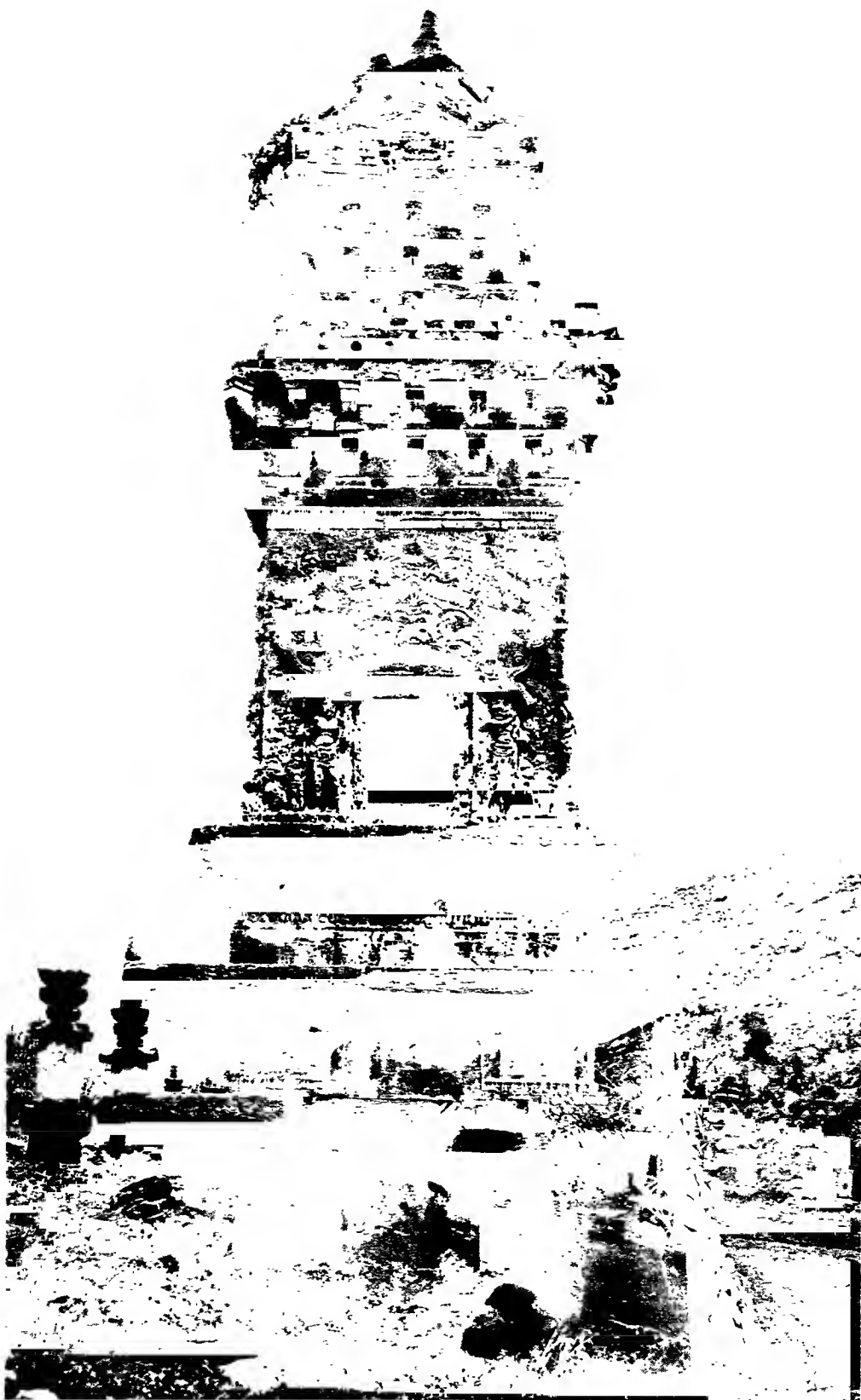


PLATE 87

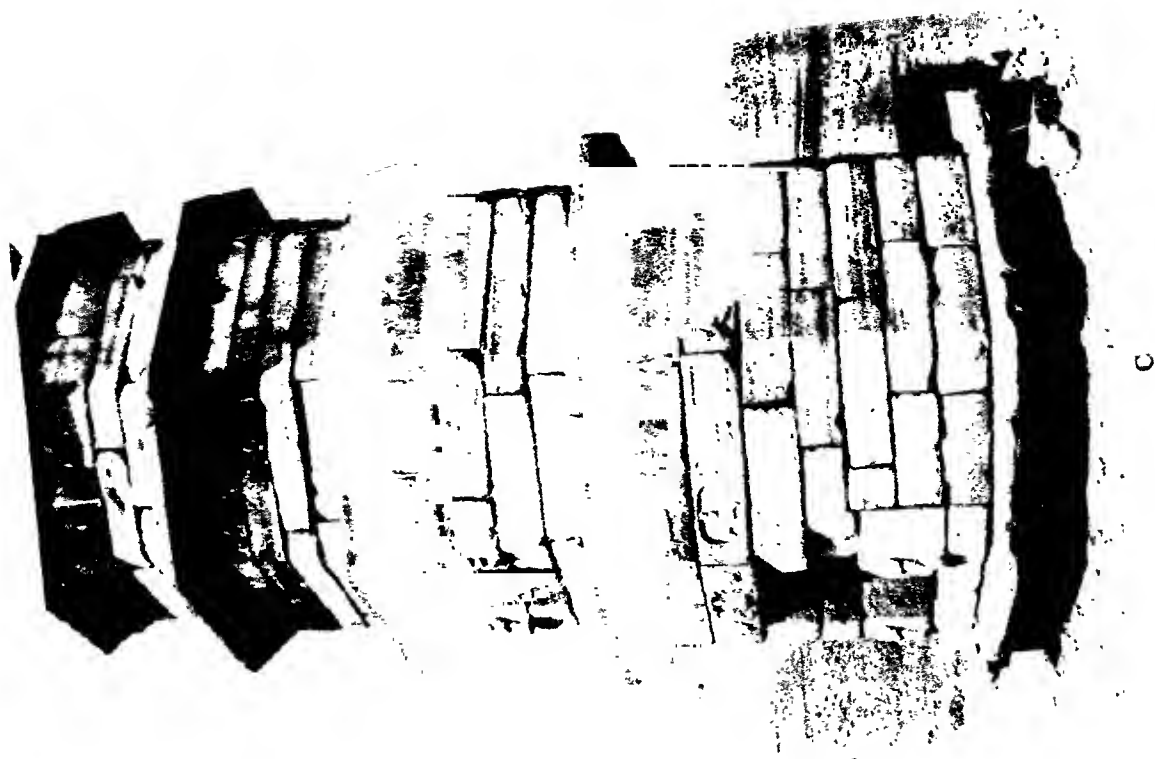
The stone pagoda of Ch'i hsia ssü, near Nanking
(Wu Yueh period, 10th century).

Phot. O.S.

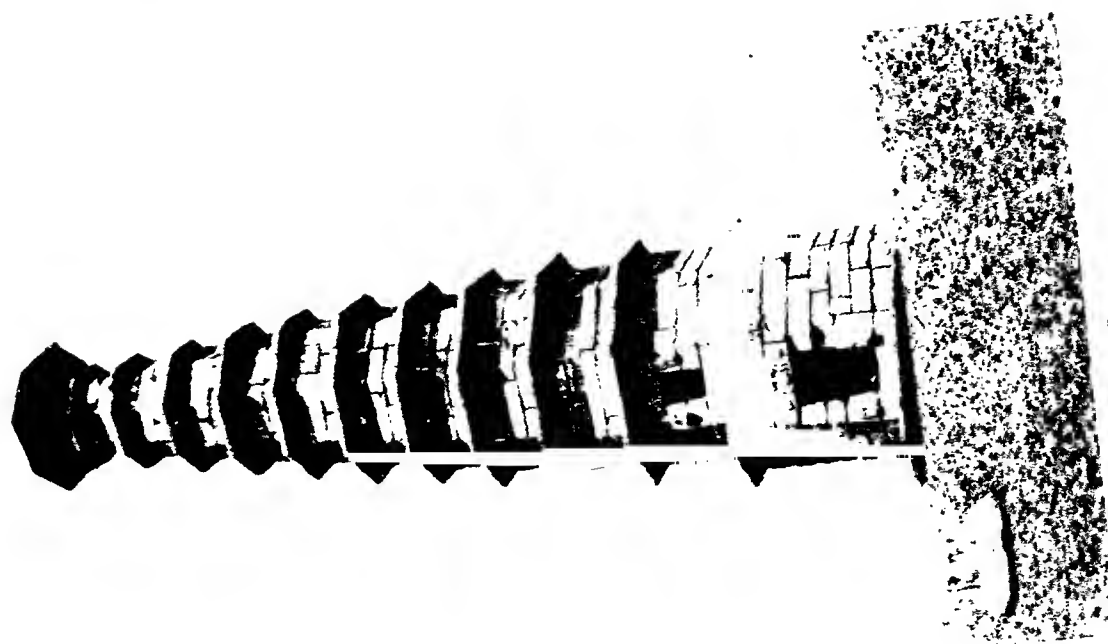


PLATE 88

- A. Stone pagoda at Ling-yin ssü, Hang-chou.
Phot. O.S.
- B, C. Stone pagoda near Ch'u-ho ts'un, Ch'u-
yang hsien, Chuhli.
Phot. O.S.



C



B



A

PLATE 89

Ssü-mên t'a at Shen-tung ssü, Shantung.

Phot. O.S.



PLATE 90

A, B. Exterior and interior view of a tomb of
the Ming dynasty.

Royal Ontario Museum, Toronto.



A



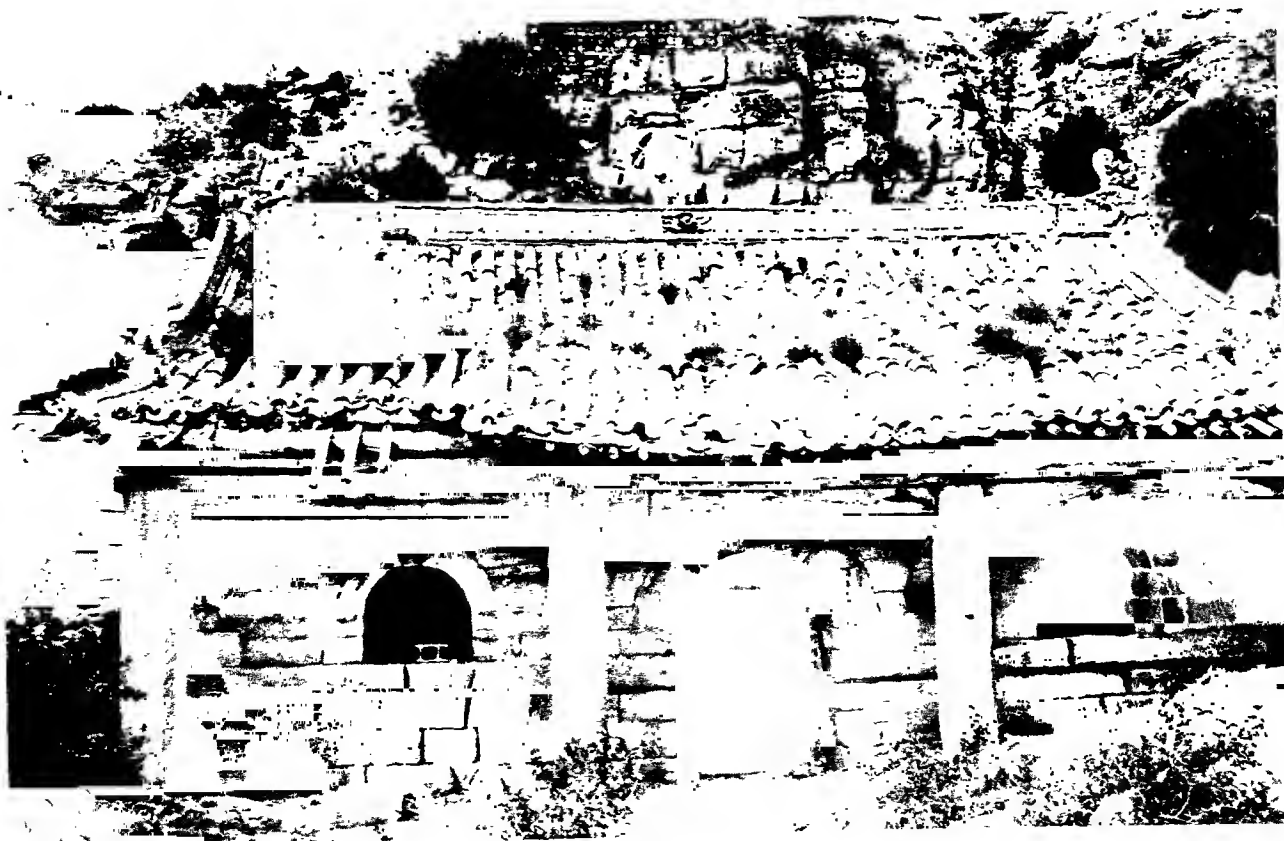
B

PLATE 91

- A. View of the so-called "Emperor Hung Wu's
batn" at Ch'u-chou, Anhwei. *Phot. O.S.*
- B. Small stone building at T'ien-lung shan,
Shansi. *Phot. O.S.*



A



B

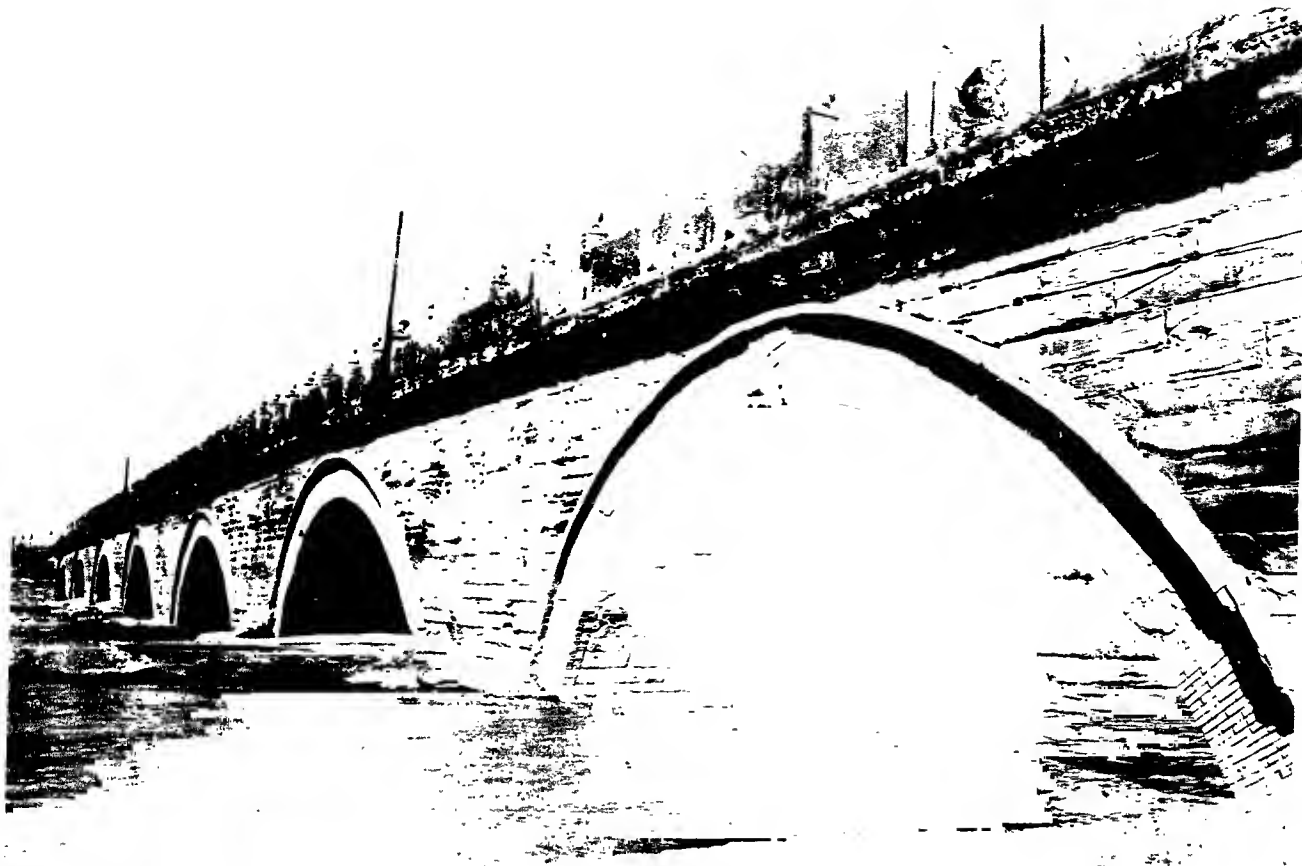
PLATE 92

A. View of the Lu-ko ch'iao (the Marco Polo
Bridge), near Peking.

Phot. O.S.

B. The Pa li ch'iao, leading over the Tung ho
canal.

Phot. O.S.



A



B

PLATE 93

A. The Mang-niu ch'iao (the " Ox Bridge "),
north of Peking.

Phot. O.S.

B. The so-called Ta ch'iao, north of Peking.

Phot. O.S.



A



B

PLATE 94

- A. Stone bridge at Chu-yang hsien, Chihli. *Phot. O.S.*
- B. Bridge of brickwork with stone lining at
Tung p'ien mén. *Phot. O.S.*



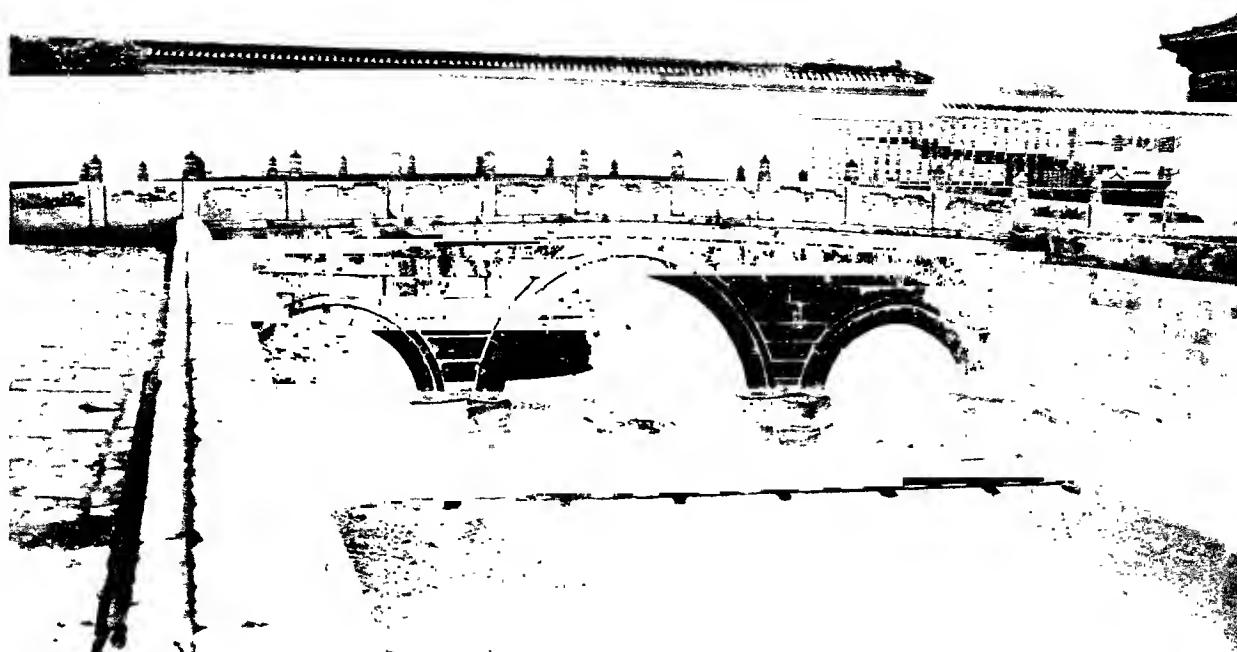
PLATE 95

A. Marble bridge over the moat of the Forbidden City.

Phot. O.S.

B. Winding marble bridge in Chung-hai, Peking.

Phot. O.S.



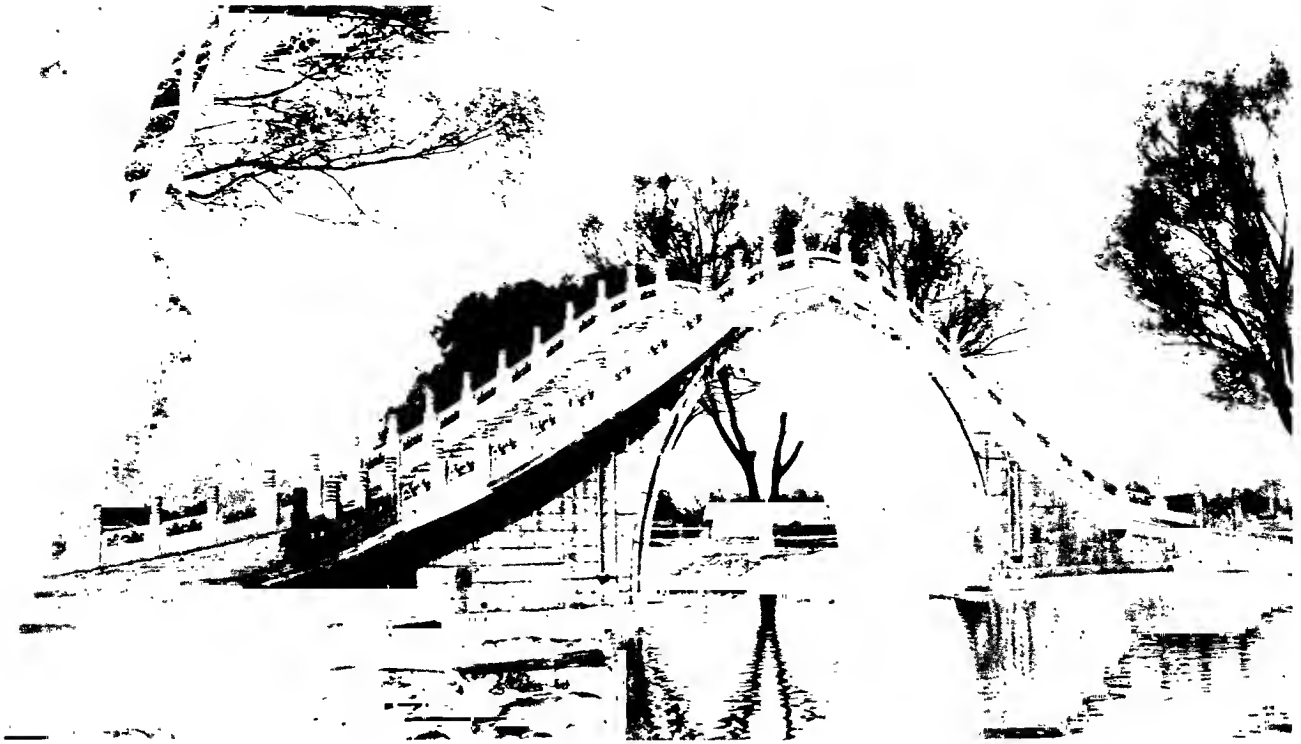
A



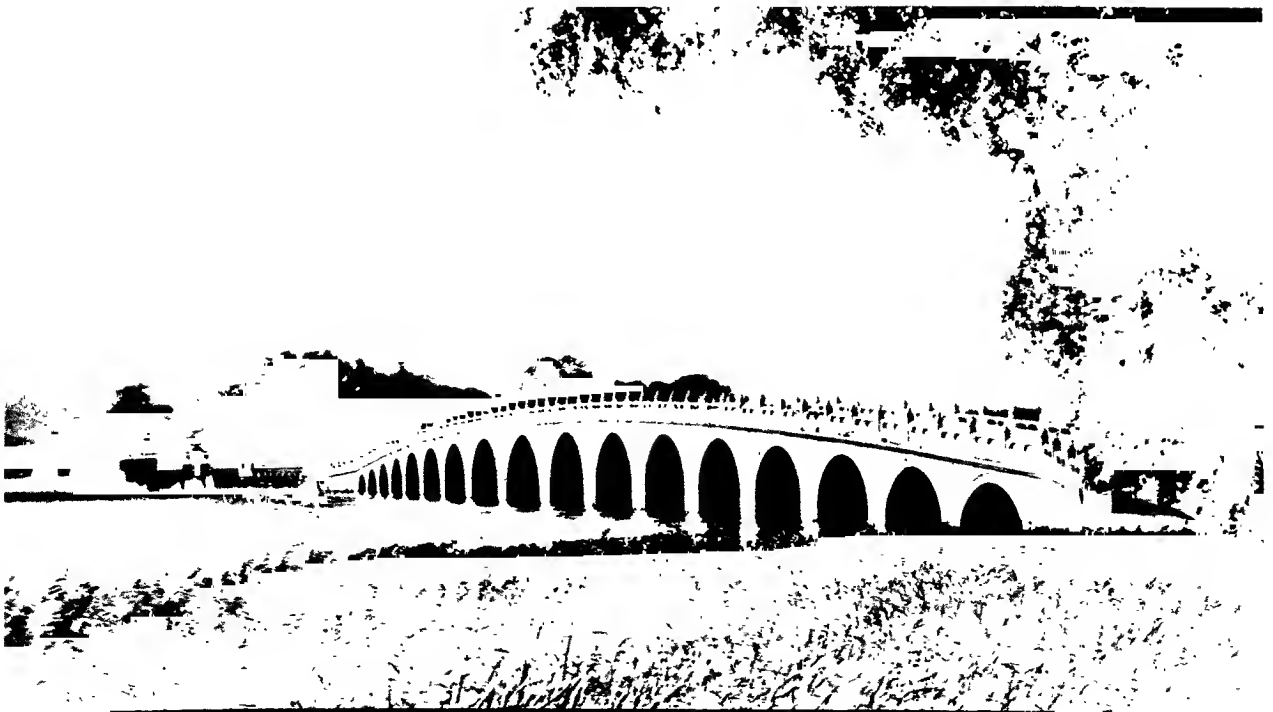
B

PLATE 96

- A. The " Camel-hump " Bridge, New Summer
Palace, Peking. *Phot. O.S.*
- B. The seventeen-arched bridge over the K'un-
ming hu. New Summer Palace, Peking. *Phot. O.S.*



A



B

PLATE 97

A. Five-spanned stone bridge at Ch'u-chou,
Anhui.

Phot. O.S.

B. Three-spanned bridge in the city of Ch'u-
chou.

Phot. O.S.



A



B

PLATE 98

A. Three-arched bridge over a canal at Su-chou,
Kiangsu.

Phot. O.S.

B. Small street bridge at Su-chou, Kiangsu.

Phot. O.S.



A



B

PLATE 99

A, B, C. The long stone bridge over the Chiu-
lung River at Chang-chou, Fukien.
Phot. Dr. Ecke.



A



B



C

PLATE 100

The great gate at Chu-yung kuan, Nan-k'ou.
Phot. O.S.

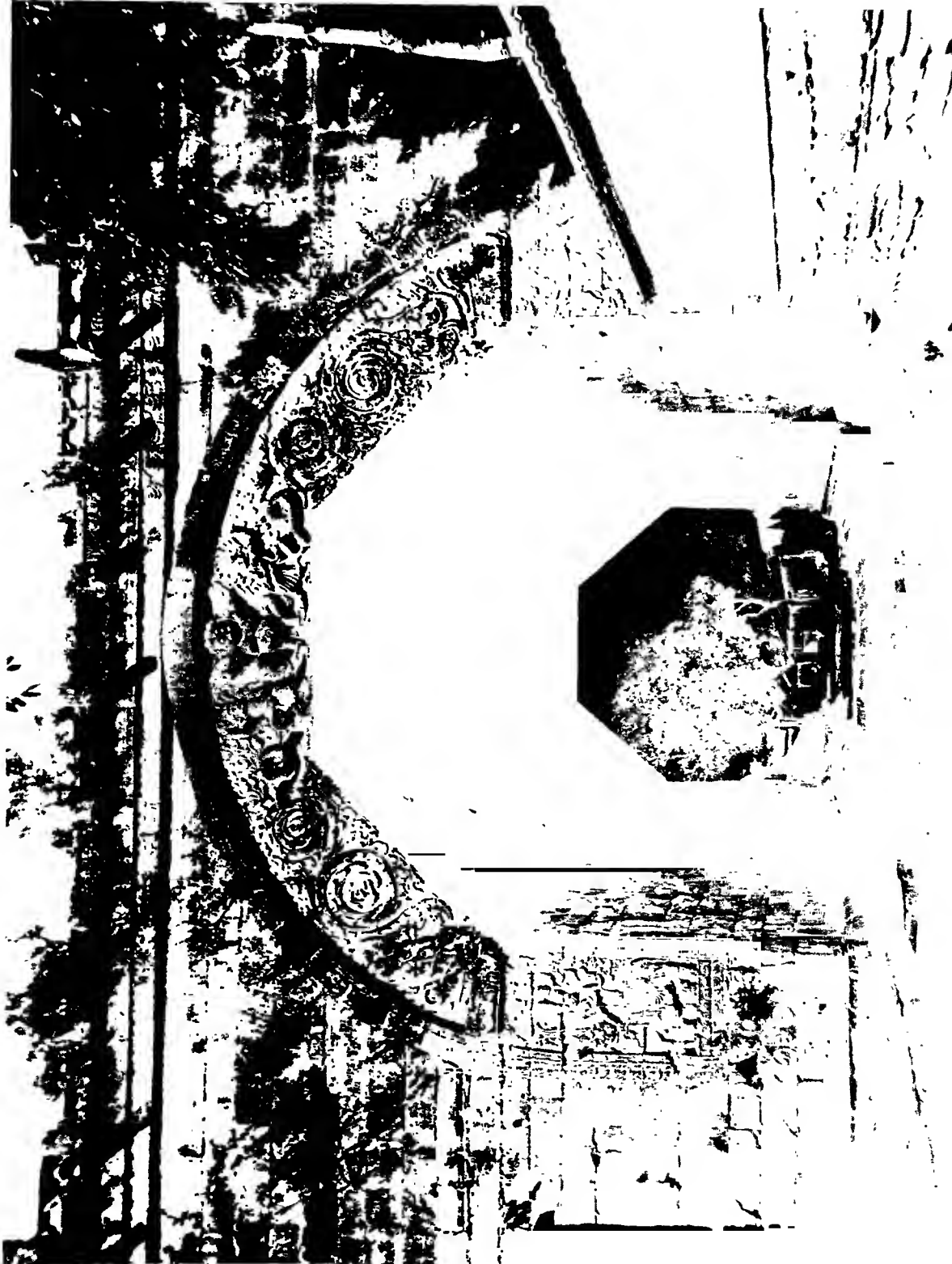


PLATE 101

Rubbing of a relief showing a two-storeyed
building of the Han dynasty, Wu-liang
tzü, Shantung.



PLATE 102

Stone slab from a tomb of the Han dynasty,
decorated in relief with a building.
Metropolitan Museum, New York.

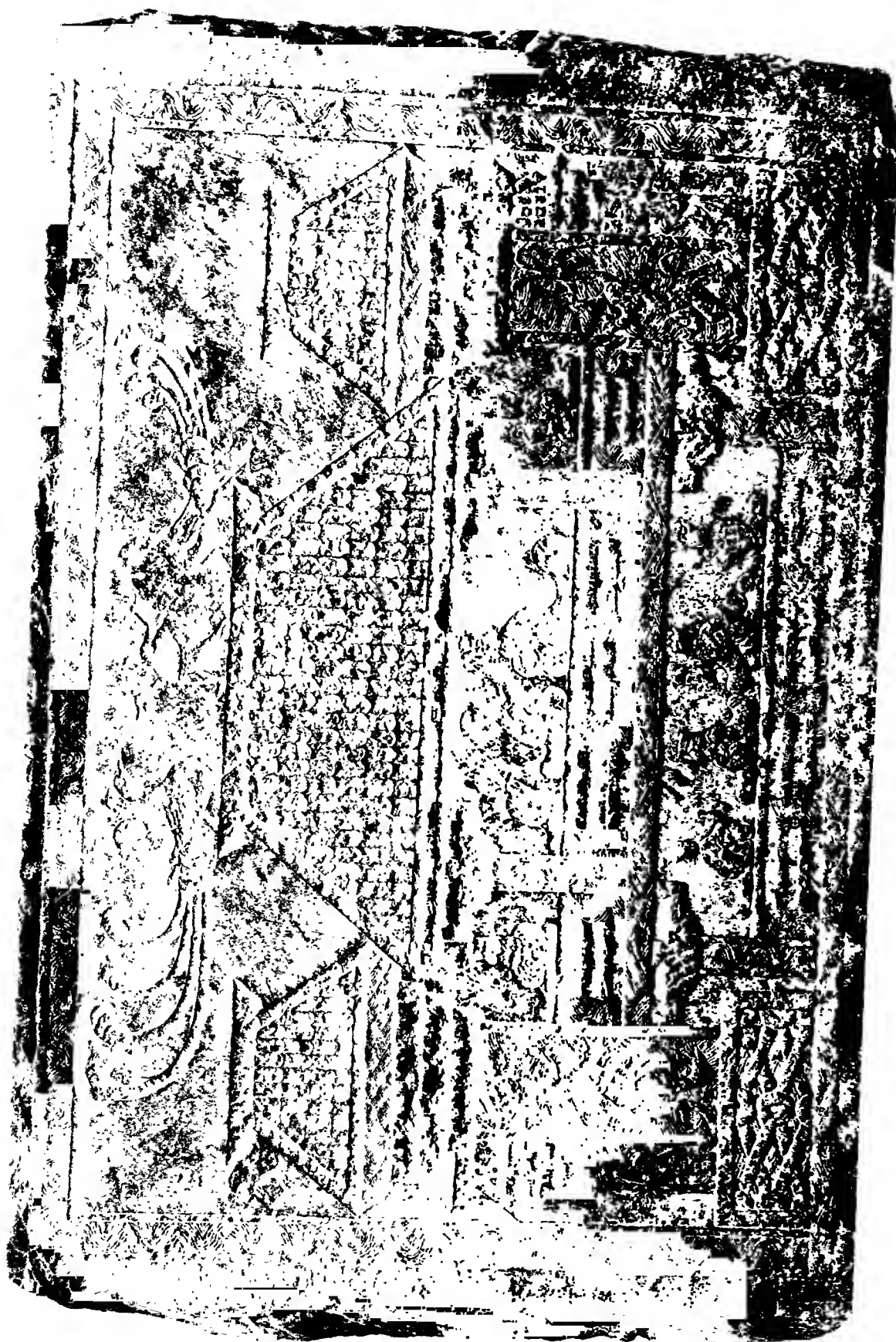


PLATE 103

**Model of a five-storeyed tower. Painted clay,
Han dynasty.**

Royal Ontario Museum, Toronto.

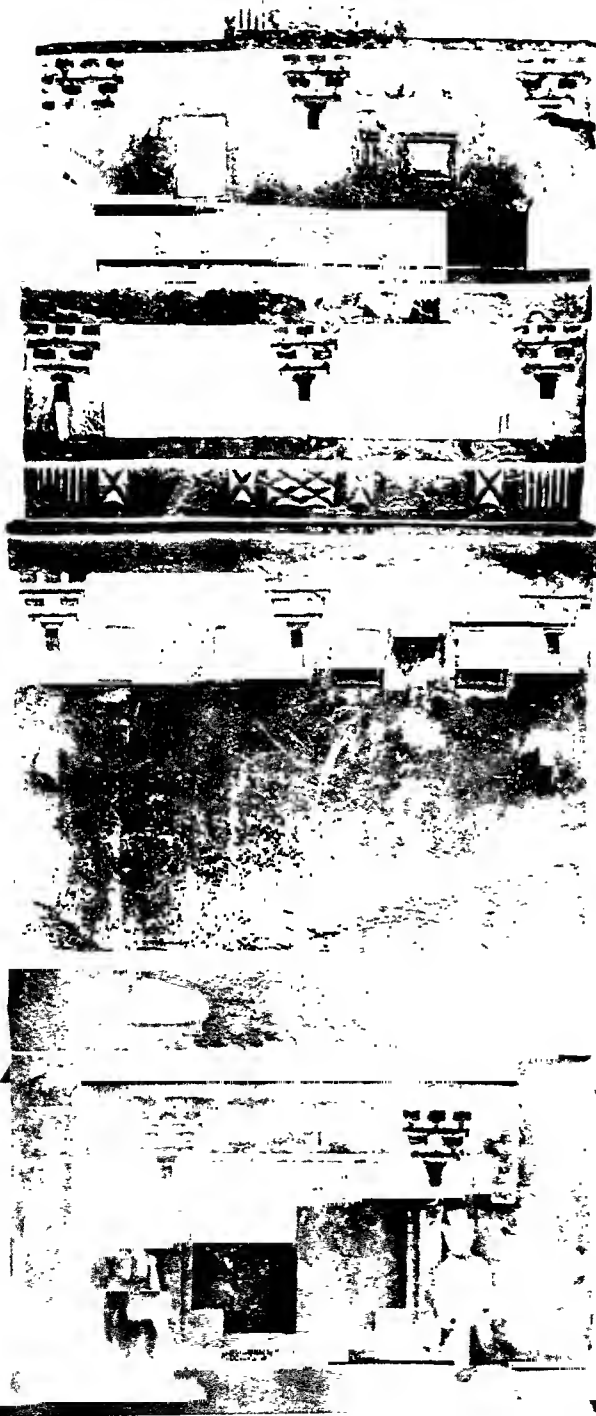
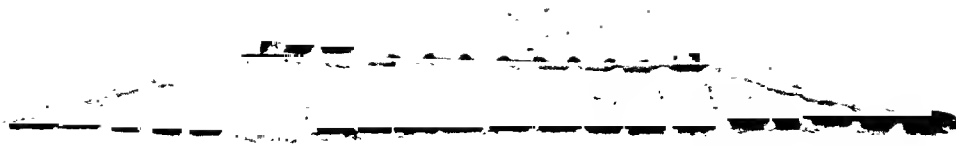
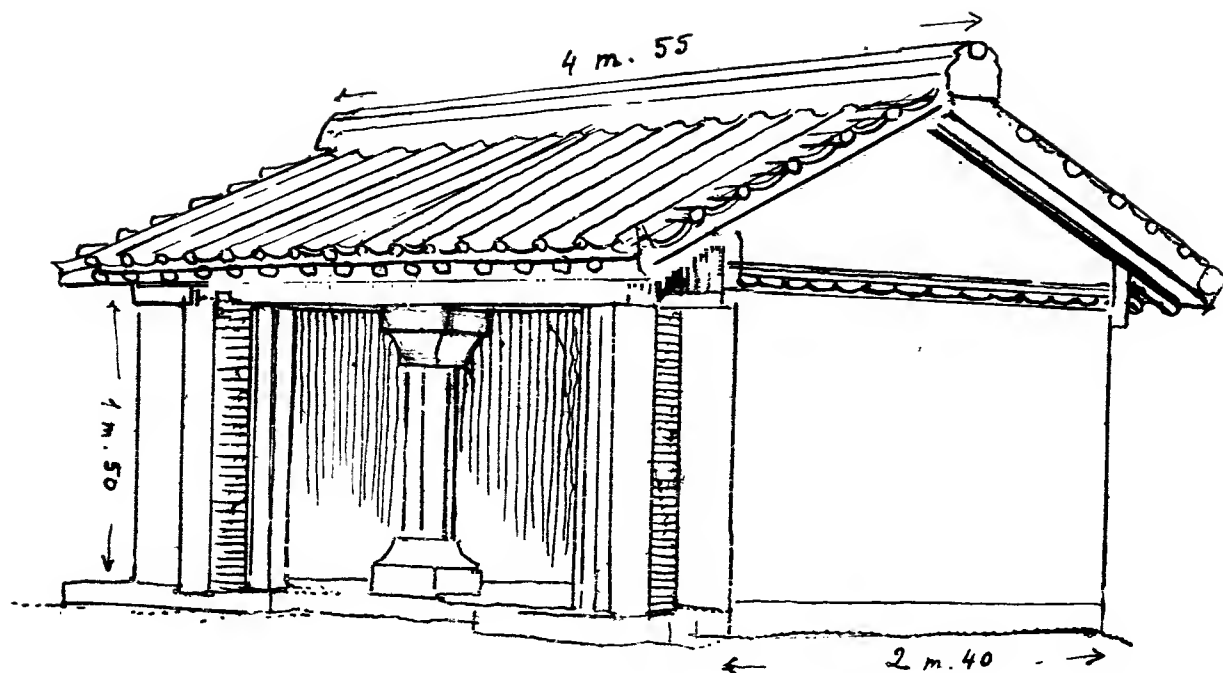


PLATE 104

- A. The little stone building at Hsiao-t'ang shan,
Shantung.
Drawing after Prof. Sekino's measurements.
- B. Square block and two capitals with figure
reliefs. Wu-liang tzü, Shantung. *Phot. O.S.*
- C. The brackets and roofs on the pillar at
Kao I's tomb, Szechuan.
Drawing after phot. Ségalen-Lartigue-Voisins.



A



C



B

PLATE 105

The pagoda of Sung-yueh ssü, on Sung-shan,
Honan (Northern Wei dynasty).

Phot. O.S.

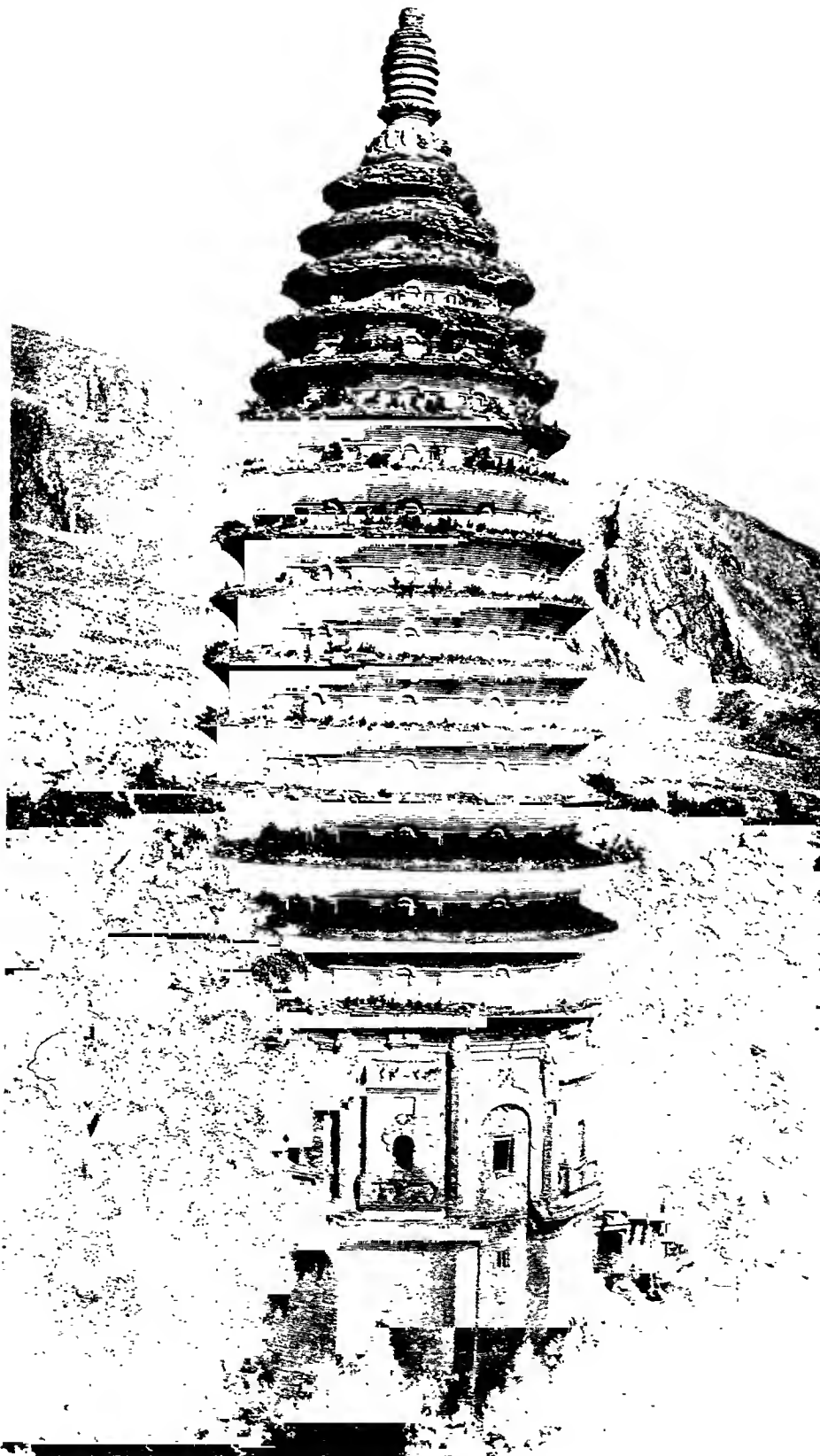


PLATE 106

Lower portion of the pagoda of Sung-yueh ssü.

Phot. O.S.

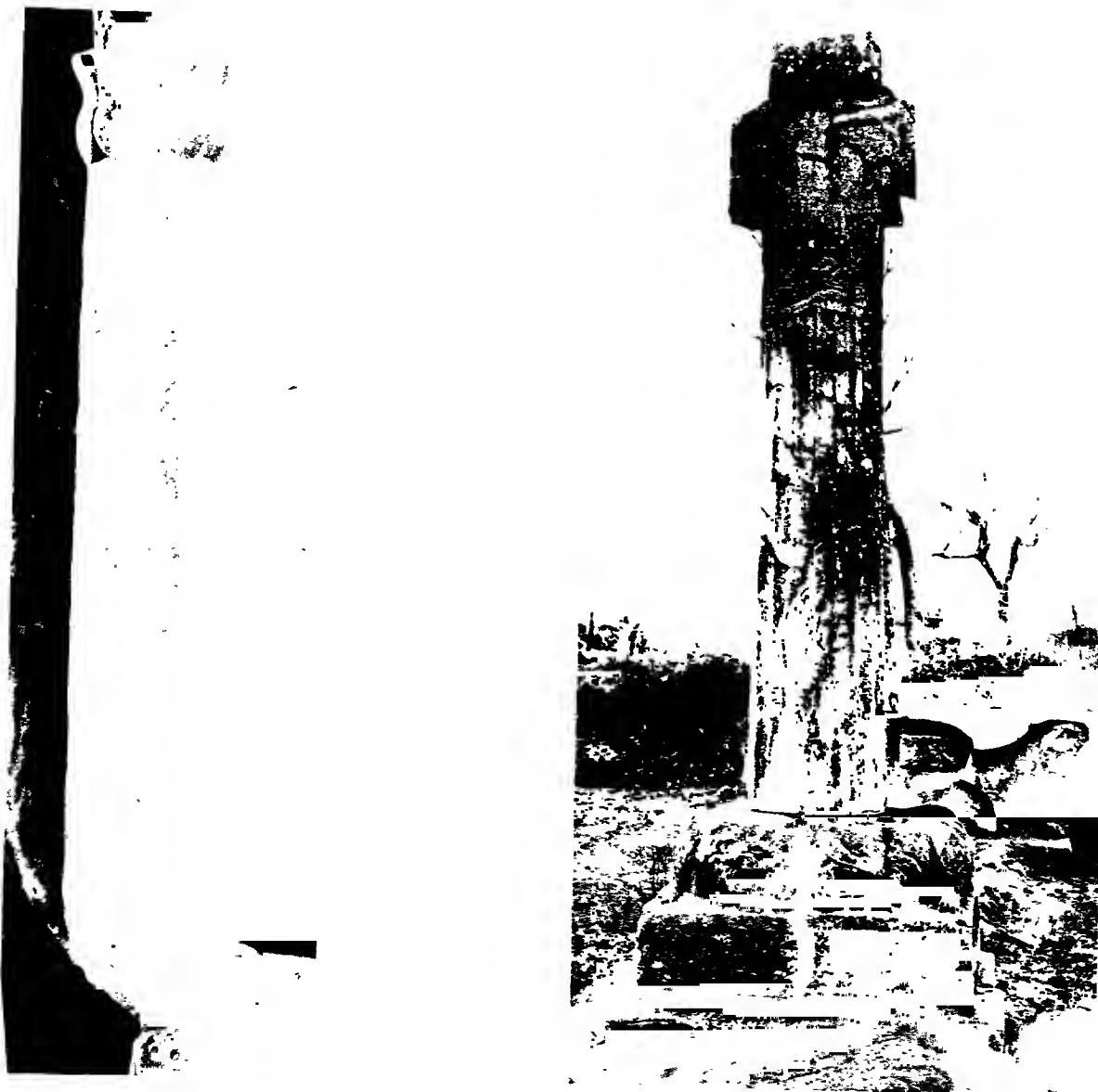


PLATE 107

- A. The vaulted entrance to the Cave I at T'ien-lung shan, Shansi. *Phot. O.S.*
- B. Hexagonal pillar at Cave VIII, T'ien-lung shan. *Phot. O.S.*
- C. Fluted pillar at Duke Hsiao Hsiu's tomb, near Nanking (A.D. 518). *Phot. O.S.*



A



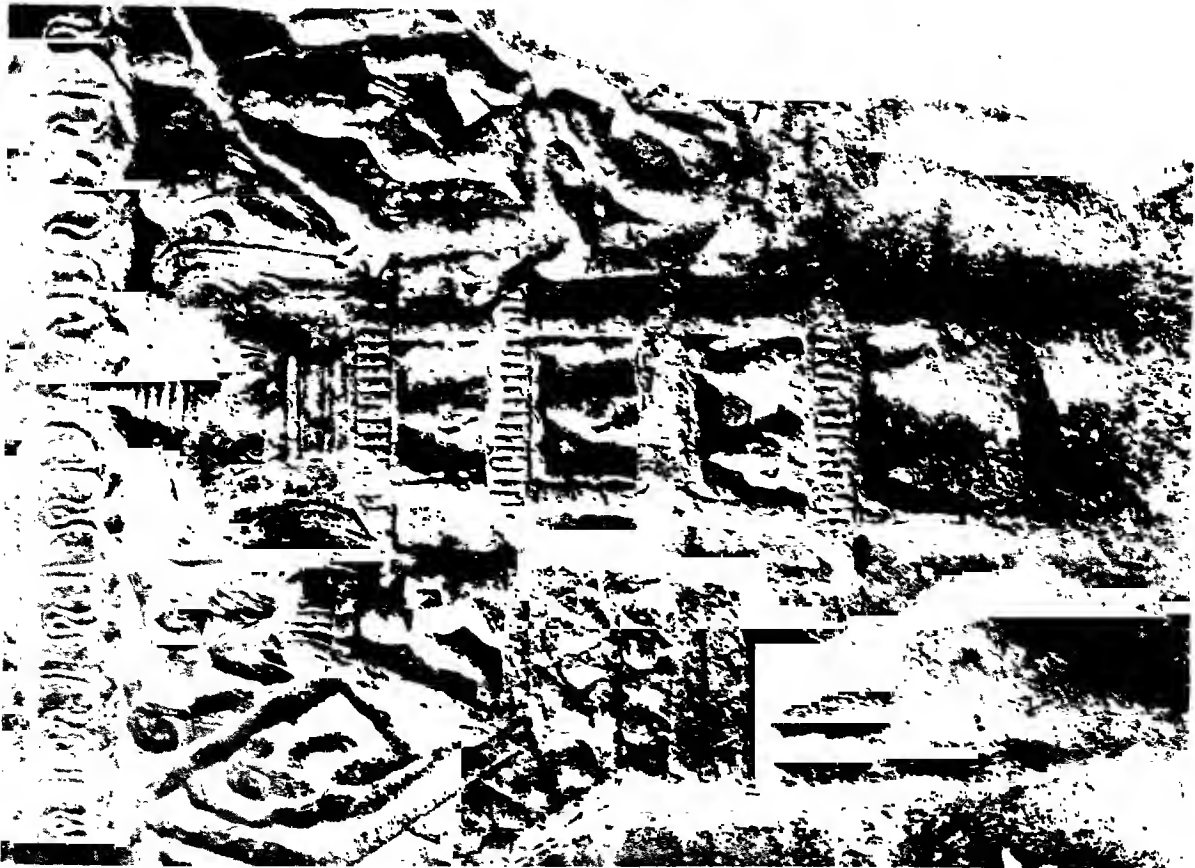
B

PLATE 108

- A. Relief reproducing a five-storeyed wooden(†)
pagoda, Cave II, Yün-kang, Shansi (6th
century). *Phot. O.S.*
- B. Relief reproducing a three-storeyed wooden
(†) pagoda. Ku-yung tung, Lung-mên,
Honan (6th century). *Phot. O.S.*



B



A

PLATE 109

Pagoda of Hokkij, near Nara, Japan (6th
century).

Phot. O.S.



PLATE 110

A. The Kondō of Tōshōdaiji, Nara (7th century).

Phot. O.S.

B. The Kōdō of Tōshōdaiji, Nara (7th century).

Phot. O.S.



A



B

PLATE III

Drawing after a stone engraving, representing a
temple hall of the T'ang dynasty, placed
over the western doorway of Ta-yen t'a,
Si-an fu, Shensi.

Drawing by Mr Reikwa Kikkawa.

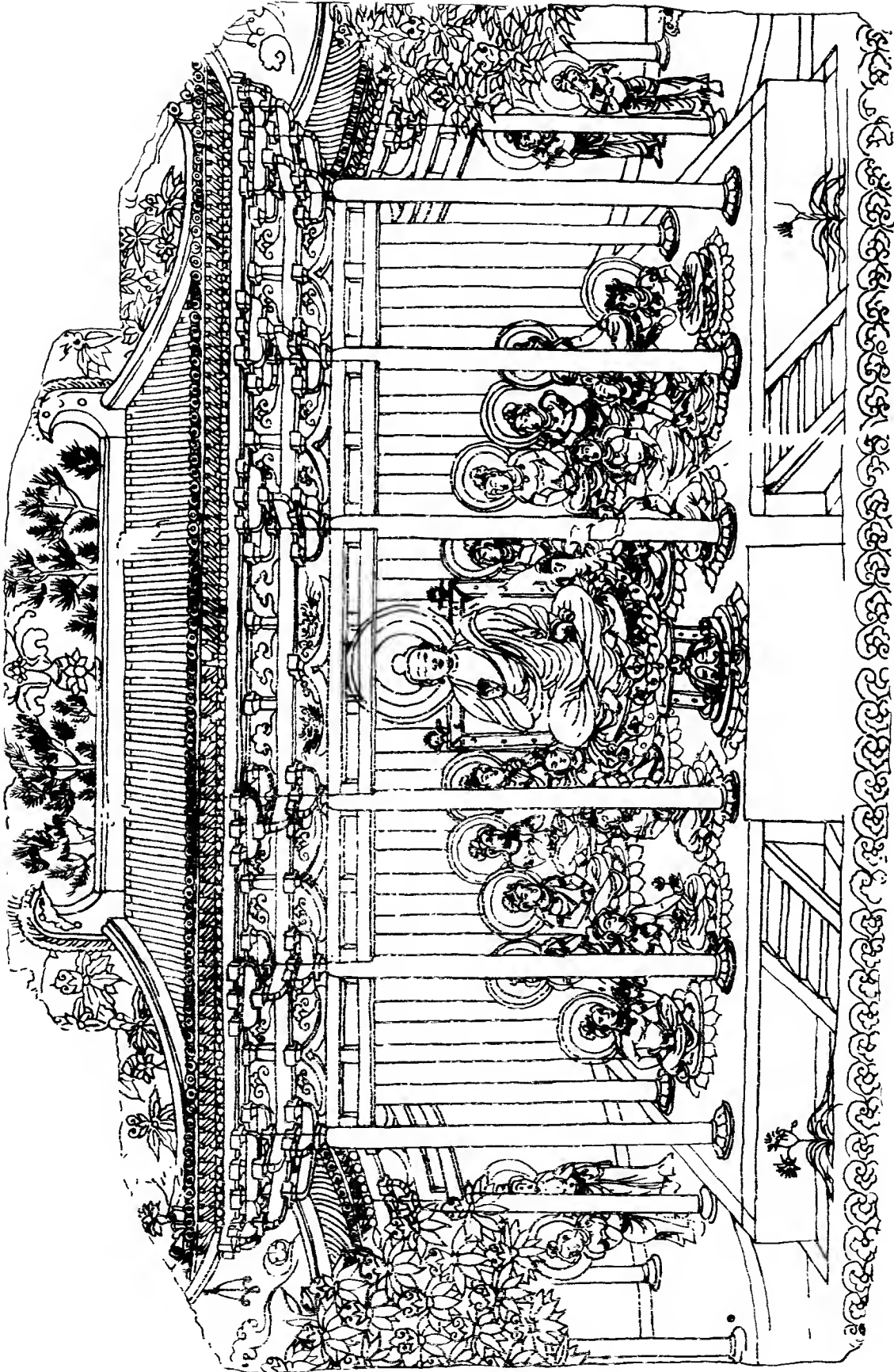


PLATE 112

A. The main hall of Hsia-hua-yin ssü, Ta-t'ung fu.

Phot. O.S.

B. View of the back of the same building.

Phot. O.S.



A



B

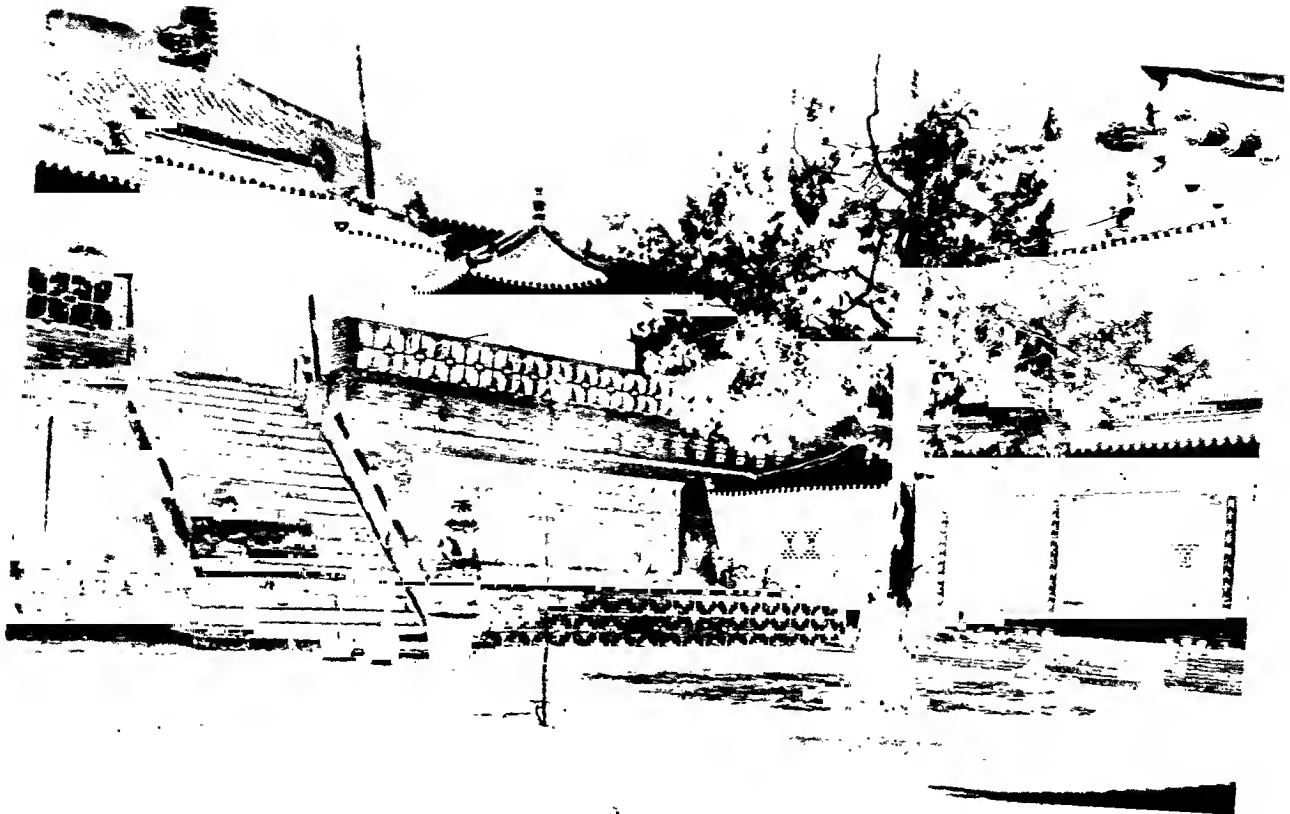
PLATE 113

A. The terrace of Shang-hua-yin ssü.
Ta-t'ung fu.

Phot. O.S.

B. The façade of Shang-hua-yin ssü.

Phot. O.S.



A



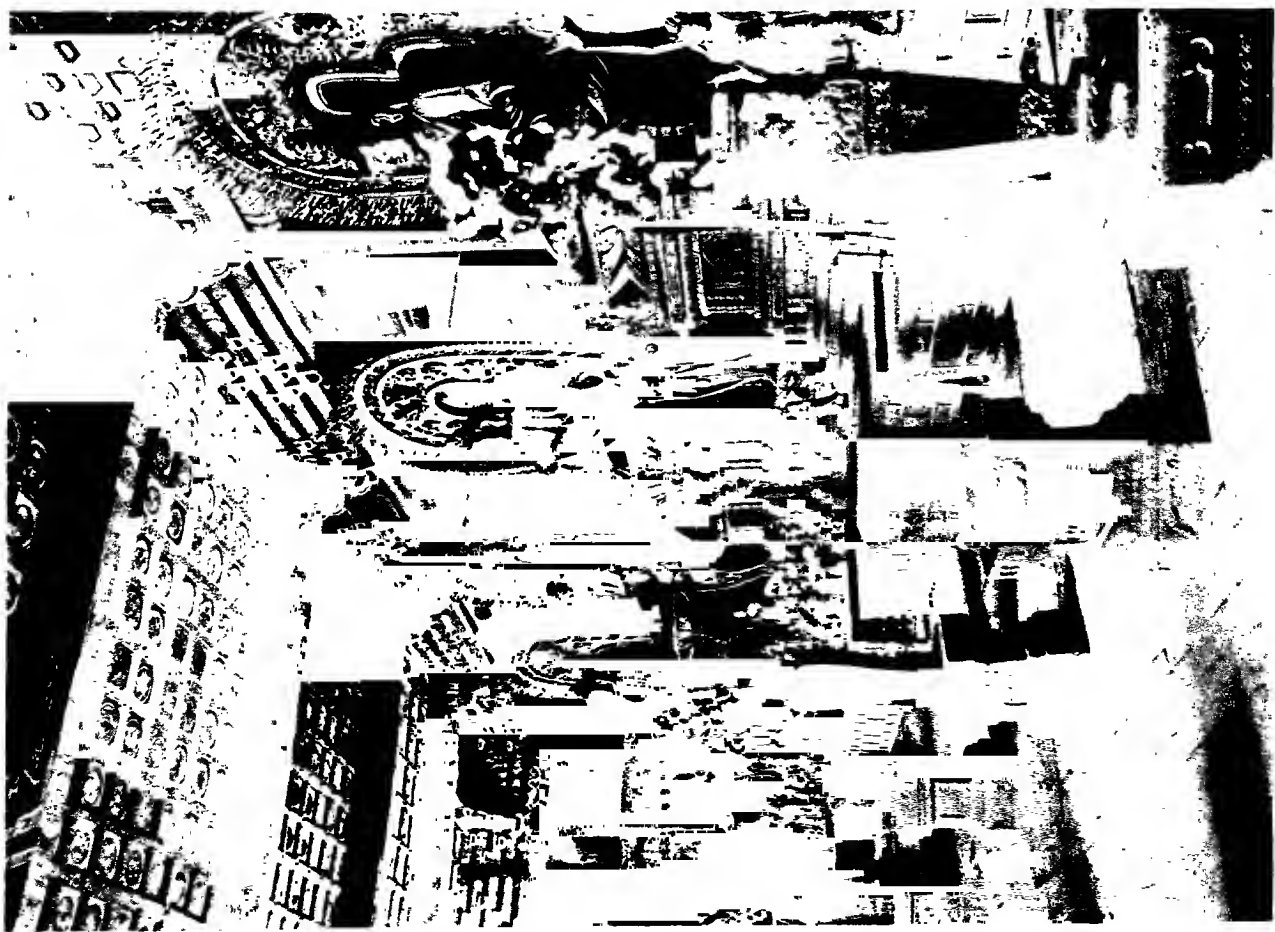
PLATE 114

A. B. Interior views of the main hall at Hsia-nua-yin ssü, Ta-t'ung fu.

Phot. O. S.



B



A

PLATE 115

Chu-tsu-an (Meditation Hall) of the Chan
(*Dhyāna*) Temple, Shao-lin ssü, Sung
shan, Honan (A.D. 1125).

Phot. Sekino.



PLATE 116

The Bell Tower at Shao-lin ssü, Sung shan,
Honan (A.D. 1302).

Phot. O.S.



PLATE 117

Lower portion of the main gate at Tōdaiji, Nara.
Japanese construction, of the Kamakura
period in the so-called "Tenjiku style." *Phot. O.S.*

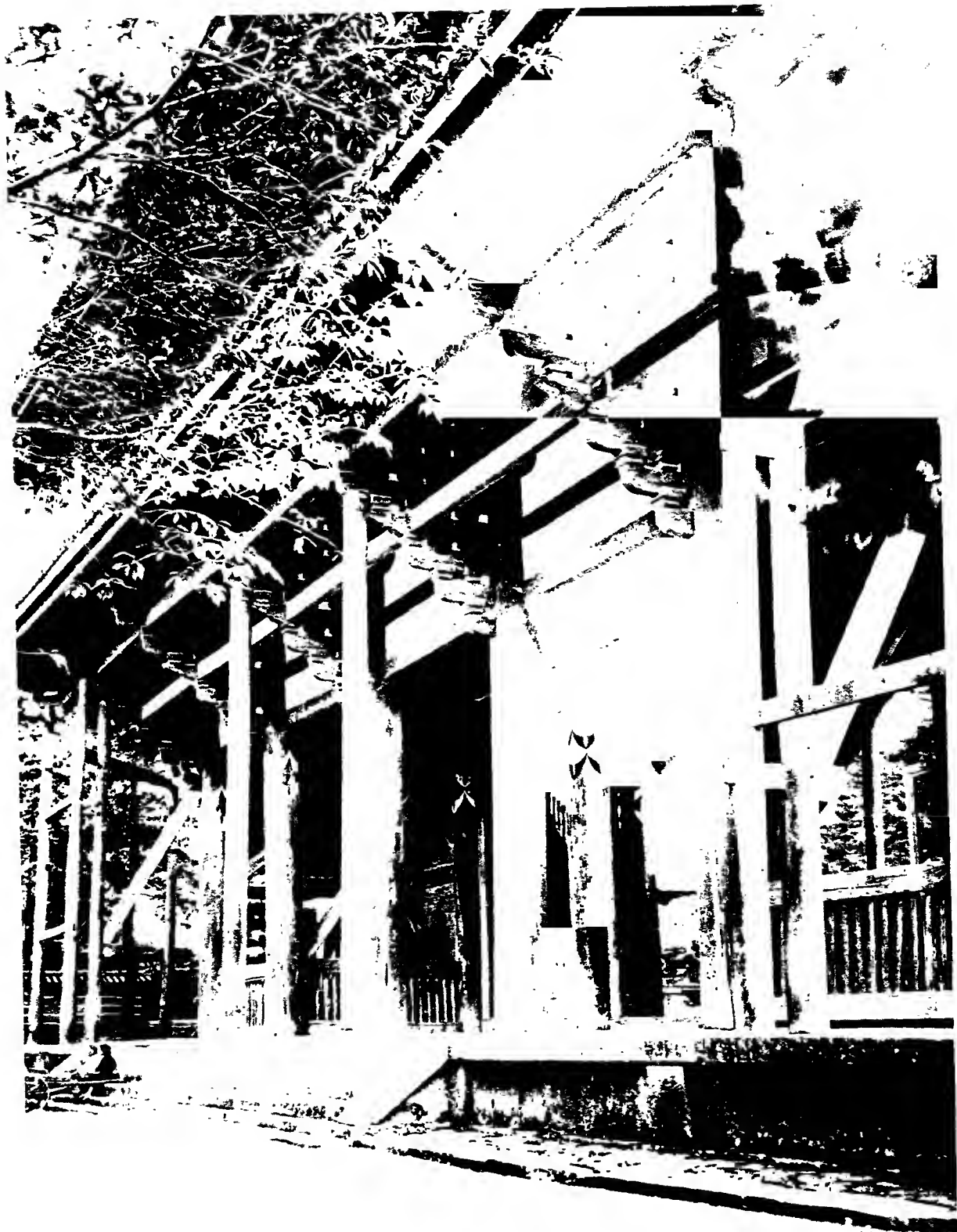
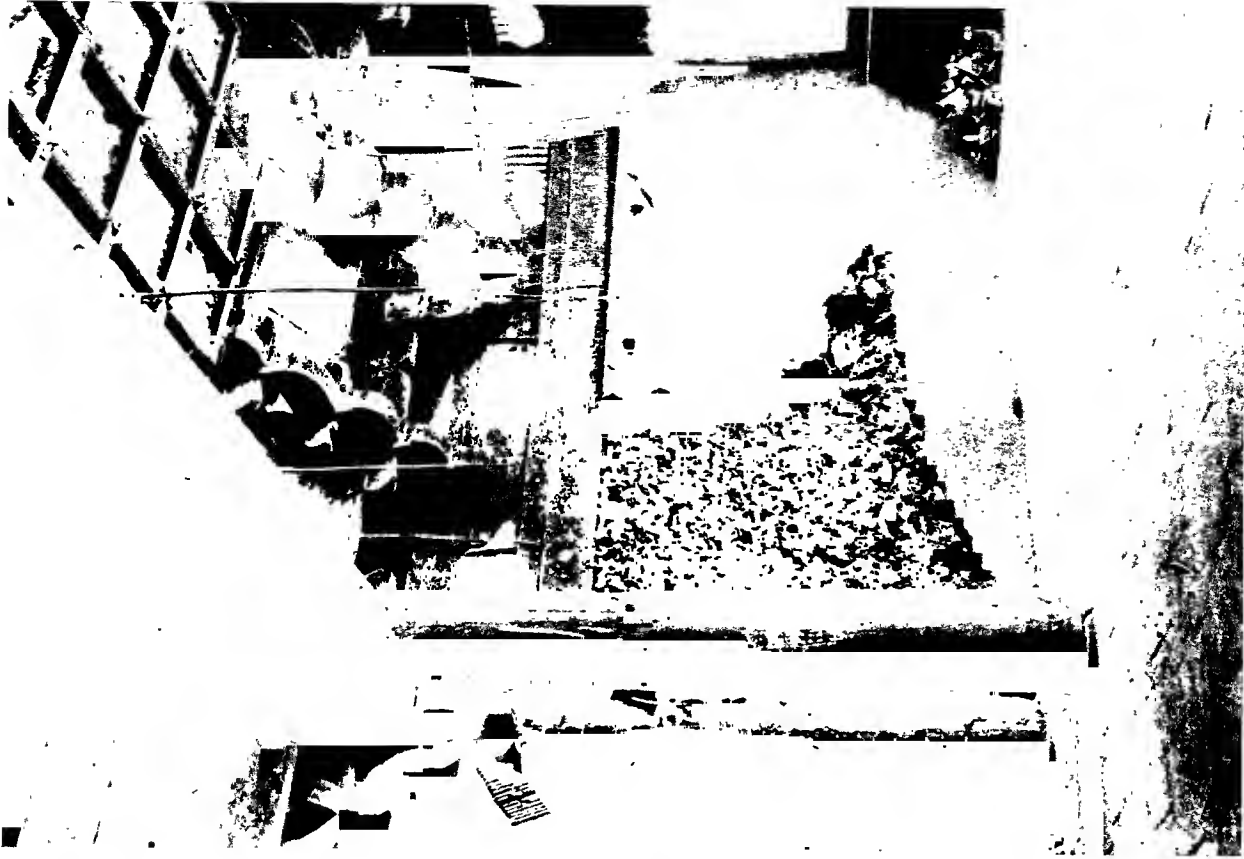


PLATE 118

- A. Corner of the East gate tower at Ta-t'ung fu.
Phot. O.S.
- B. Interior view of one of the halls at Ta-fo ssü,
Cheng-ting fu.
Phot. O.S.



B



A

PLATE 119

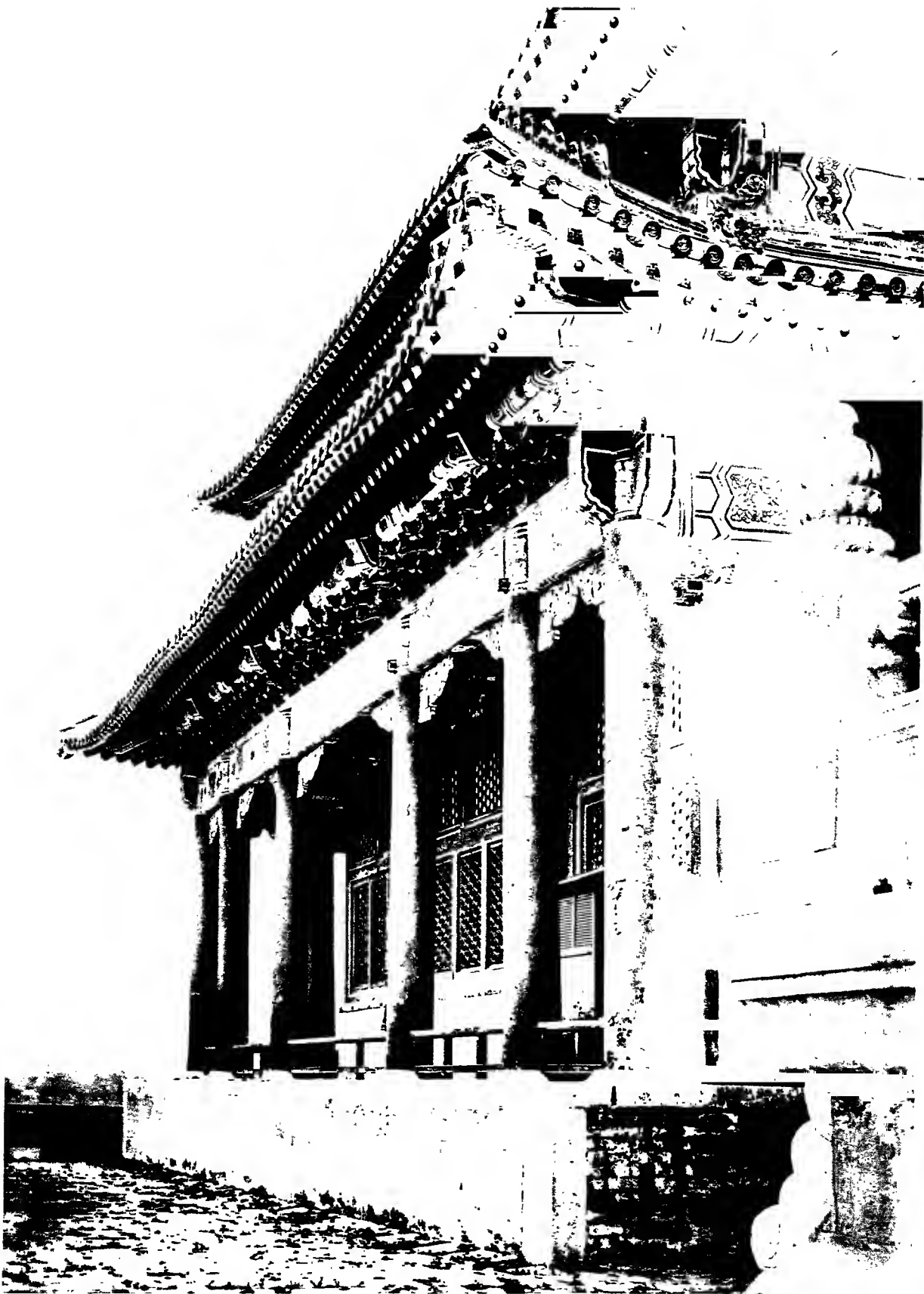
**South façade of the pavilion on the Drum Tower
at Si-an fu (early Ming period).**

Phot. O.S.



PLATE 120

Portion of the Eastern pavilion on Wu mén, Forbidden City, Peking (late Ch'ing period).
Phot. O.S.



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